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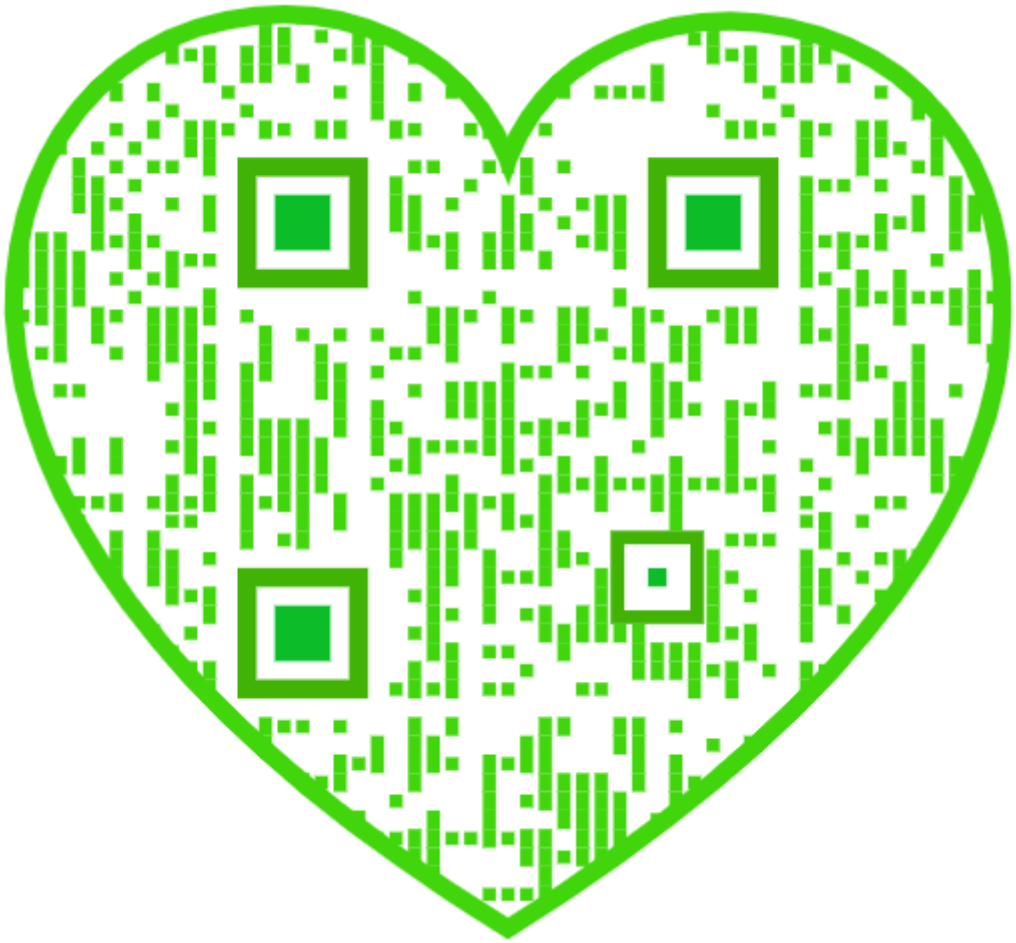

EVERYBODY'S

PAINT BOOK.

A COMPLETE GUIDE TO THE ART OF

OUTDOOR AND INDOOR PAINTING.

DESIGNED FOR THE SPECIAL USE OF THOSE WHO WISH TO DO THEIR OWN WORK,

AND CONSISTING OF

PRACTICAL LESSONS

IN

PLAIN PAINTING, VARNISHING, POLISHING, STAINING, PAPER-HANGING, KALSOMINING, ETC.,

AS WELL AS DIRECTIONS FOR

RENOVATING FURNITURE, AND HINTS ON ARTISTIC WORK FOR HOME DECORATION,

TOGETHER WITH

A FULL DESCRIPTION OF THE TOOLS AND MATERIALS USED.

PRECISE DIRECTIONS ARE GIVEN FOR

MIXING PAINTS FOR ALL PURPOSES.

ILLUSTRATED.

Franklin
BY F. B. GARDNER,
Author of "The American Method of Carriage Painting."

NEW YORK:
M. T. RICHARDSON, PUBLISHER.
1884.

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PREFACE.

In the following pages an effort has been made to record the experience of the author, gained by close application to painting for over thirty years. To attempt to impart technical knowledge to one not possessing even a primary schooling in the art, it must be admitted, is no easy task. If, after a perusal of these pages, therefore, and a trial of the many methods described, the would-be painter fails in his endeavors, he will, I believe, feel charitably inclined, and give me credit for a conscientious endeavor to explain everything clearly. Failures, should they occasionally occur, will generally be found to be the result of unskilful combinations or manipulations, and should by no means discourage the student. A second or third trial, after a careful study of the directions, will, no doubt, usually bring success.

I desire herewith to express my obligations to Miles

Bros. & Co., manufacturers of brushes, and also to Bradley & Smith, manufacturers of brushes, both of this city, for their courtesy in permitting the use of the cuts employed to represent the different styles of brushes recommended in this work.

F. B. Gardner.

New York, *March* 15, 1884.

EVERYBODY'S PAINT BOOK.

CHAPTER I.

General Remarks.

We all know how difficult it is sometimes for the farmer and even the resident of a village or city to get a small job of painting done properly at a reasonable cost. He may be able and willing, for reasons of economy, to do the work himself, but lacks the knowledge requisite to mix the paint, or to purchase the proper materials for such work, and through fear that he will not succeed, or as former experience has taught him, that "the paint won't dry," or "is a poor, unsatisfactory color," he abandons the idea of improvement by paint or varnish, and the consequence is, that his buildings, farming utensils, vehicles, and household furniture go to ruin quickly, and he sinks many hundreds of dollars, when a few hundred cents would have saved all, and have made his place—to use an inelegant, but expressive phrase—"as pretty as a red wagon."

The "women folks" often have little jobs of painting to be done; and many a one is capable of wielding the brush well enough if she "only had the paint." There

are the churn, tubs, pails, the pump, wood or brick-work around the stove, or shelf, and a hundred and one little things which constant use makes unsightly, and the cost of painting them would be trifling. But how to accomplish it with the limited knowledge they possess is a problem which it seems almost hopeless to attempt to solve, and so much of the sunshine of their home is shadowed by a desire to do, without the means at hand to carry out their wishes.

It is the purpose of this volume to supply, in plain language, divested of all technicalities, the information required to enable every man and woman who may feel so inclined, to do their own painting. The author brings to the work an extensive experience in the various branches of painting and varnishing, and feels confident that those who follow his directions carefully will have no cause to complain of the result.

CHAPTER II.

What is Paint?

Let us first consider what paint is. Paint is simply a mixture of one or more colored pigments and liquids; the former being in some instances common earth, clay, or pulverized stones; in others, products of the vegetable world; and again in others, products of the mineral world. All pigments, however, are presented to us in the form of a dry powder, in lumps, of variable hardness or in coarse grains.

The liquids commonly used are:

1st. Linseed Oil, in its raw state, or after it has been boiled with chemical agents to hasten its drying properties.

2d. Japan Dryer, for hastening the drying of oil paint, or for mixing with pigments to form paint.

3d. Turpentine, a volatile thinner or vehicle, which rapidly evaporates, leaving the oils to oxidize or harden.

With these materials we are enabled to make paint of any color, or for any purpose; durable paint for outdoor wear, either with or without a coating of varnish over it;

or a ready drying paint to be used indoors, which would not be durable if exposed to the weather.

There are a few of the pigments which require no further preparation than a simple stirring, or possibly straining through a coarse cloth after they are mixed, while others must be crushed and ground in a paint-mill, to bring them to the necessary degree of fineness. It will not be amiss just here, to enumerate those pigments which require no grinding for ordinary work, so as to enable those who are not provided with a mill, or with a marble slab and other conveniences, to choose a color to suit their requirements.

Pigments which require no Grinding.

White Paint is made by mixing white-lead, which may be purchased already ground in oil, at from ten to fifteen cents per pound; any offered below that price will generally be found to be adulterated with chalk or other inferior substances.

Outdoor White.—For durable outdoor white, mix the white-lead to a milk-like consistency, with linseed oil, either boiled or raw, the latter being preferable. A small amount, say, of turpentine may be added to cause it to spread easily, or a little Brown Japan may be mixed with it to hasten the drying. This paint is suitable for houses, fences, and like purposes.

Indoor White.—White paint for the inside of a house

should not be mixed with oil, for if it is, and the room be closed or darkened, the paint will turn dark, or yellow. Turpentine alone should be used, except that a very little Japan dryer may be added to make it dry quickly. Some house-painters use oil in first coats on interior work, but it is not considered a good plan.

WHITE-LEAD GROUND IN OIL, known to many by the name of "keg-lead," is the base or principal ingredient in a variety of colors, and serves well as a durable paint on many kinds of work. We will consider it, however, as a white paint before entering upon the mixtures by which tints are formed.

White-lead, being a dry pigment mixed with linseed oil, and ground fine in steam mills, is ready when diluted to the consistency of milk, with turpentine, to be spread upon any ordinary work where *white* is desired; but if it be used for the first coat, or "priming" on new wood, for either inside or outside work, it is better to dilute with raw oil rather than with turpentine, and the addition of one gill of Brown Japan (a dryer) to each quart of the mixed paint, will also be found of value, where time is an object. After the first coat has become dry, or hard, and a second one is necessary, the lead may be diluted with turpentine only, and a small quantity of dryer—say one gill to a quart of paint—be used.

PATENT DRYER.—In the opinion of the writer, all such dryers as litharge, patent dryer, sugar-of-lead, etc., are

unreliable and unfit for use, while a liquid dryer, such as brown japan or japan gold-size may be used to advantage in mixing any kind of paint.

WHITE PAINT mixed by the latter method will answer for the interior of houses, or work not to be exposed to the weather without varnishing; but where it is to be exposed, and not to be protected by varnish, more oil than turpentine should be used in mixing.

BOILED LINSEED OIL.—Many have a preference, based upon hearsay, or ignorance of the matter, for boiled linseed oil in mixing paint, and there may be some places, or some kinds of work on which it will work best; but the writer has yet to learn where.

RAW LINSEED OIL—not fish oil, nor cotton-seed oil, but the "simon pure" article—if aided in drying, or oxidizing (the proper term) by brown japan, will invariably give perfect satisfaction.

PAINTING A PURE WHITE.

To paint a pure white, and have it "flat" or "dead," *i. e.*, without gloss, take from the keg the desired amount of white-lead, and thin it to the consistency of milk, by the addition of turpentine. Then set it away to settle; the white-lead being heavy, will go to the bottom of the vessel, leaving a large portion of the oil and the turpentine which has not evaporated on the top. This should be poured off carefully, and the sediment mixed to a

proper consistency for spreading with turpentine. Such paint is used by carriage-makers in the painting of white hearses, stages, etc., and must be protected by varnish.

VARNISHING OVER WHITE.—In varnishing white work the best way is to use varnish mixed or colored with a small quantity of the white paint. This is called "color-and-varnish." It is seldom, if ever, that varnish can be had clear enough to lay over white without discoloring it.

DAMAR VARNISH.—Many think that white Damar varnish can be used over white, and so it may, if the work is not to be exposed to the weather or to be handled frequently, but it is poor stuff, at best, and should be discarded from all ordinary painting. Any first-class carriage finishing varnish is excellent for covering white as described above.

After the coating of white "color-and-varnish" is dry, it should be rubbed to an egg-shell gloss, and perfectly smooth with pulverized pumice-stone and water—a process which will be fully explained under its proper head. (See page .)

PAINT THAT RUBS OFF OR "CHALKS."—We frequently see white paint on the exterior of buildings, on wagons, and other things, which can be easily rubbed off in fine dust, and were we in ignorance of the cause we might experience a feeling of surprise. One of the causes is loss of oil. The wood being porous, absorbs or draws in the oil, leaving the white-lead on the surface without sufficient binding quality. In our rambles, gentle reader,

through these pages, we shall see further on how this difficulty may be overcome.

White-lead, as before said, forms the basis for all tints of color, when a pigment is mixed with it, as will be seen in the following list:

How Tints are Formed with White.

Straw Color.—Add chrome yellow to white-lead.

Silver-gray.—Add lampblack and indigo.

Rose Color or Pink.—Add carmine or lake.

Pea-green.—Add chrome green.

Lead Color.—Add lampblack.

Wood Color.—Add raw umber.

Drab Color.—Add burnt umber.

Salmon Color.—Add umber, red and yellow.

Pearl Color.—Add blue and black.

Cream Color.—Add yellow and red.

Each of these will be considered hereafter, so that any one may procure the ingredients and mix them in proper proportions. The amateur will find in mixing paint, that a pigment and oil alone will not work as well as when there is a dryer (brown japan) mixed with it; the oil having a tendency to run away from the pigment and produce streaked work. This is particularly noticeable with lampblack.

Brown Japan as a Dryer.—A small quantity of a liquid dryer—say one gill of brown japan to a quart of paint—

will prevent the trouble. Paint which has run, as spoken of, and is not yet dry, may be made quite perfect by rubbing the brush over it, filled with a little japan and turpentine.

There is one pigment, and but one, which is prevented from running by the simple use of water, and that is ultramarine blue.

The use of oil in paint, except in a very few cases, should be *confined to outdoor work entirely.* There is no good reason for indoor paint being mixed with anything so durable, for, as before mentioned, the desired durability can be imparted by coats of varnish.

Black for ordinary work may be made of lampblack, which is simply the soot from burning oils or vegetable substances, and not only is it an impalpable powder, but being pure carbon it is unaffected by the elements, and therefore the most durable of all pigments.

Lampblack does not possess the jet color of Ivory Black or bone black, but it serves a very good purpose, if those colors are not brought in close contact with it. It may be mixed with linseed oil, but being of a greasy nature it does not dry well when so mixed, and it is best, in most cases, to use brown japan, or carriage rubbing varnish and turpentine in mixing; see chapter on mixing paint. Lampblack (dry) costs about eight cents per pound.

Red.—There are several red pigments which may be

used without grinding. The first and brightest being Vermilion, of which there are several kinds.

English Vermilion is used on carriages, and for any fine work, while American vermilion is suitable for wagons, farm implements, etc.

Color for Farm Tools and Wagons.

Indian Red is an excellent dark red color, and is suitable for wagons and machinery or farm tools.

Color for Brickwork and Outbuildings.

Venetian Red is a red ochre or earth, suitable for any common work, or for brickwork and outbuildings.

Color for Ironwork.

Red-lead is a bi-product in the manufacture of white-lead, and an excellent pigment for ironwork. Either of these reds may be mixed with oil, japan, or varnish and turpentine without grinding.

Color for Machinery or Household and Farm Implements.

Green.—All green pigments may be mixed and used direct, except on fine work. The most useful green is Chrome Green, of which there are three grades, the light medium and deep. This color is well adapted for machinery, or for household and farm implements.

YELLOW.—Chrome yellow comes in several shades, viz., light, medium, deep, lemon, orange, etc. It may be mixed without grinding, but it is best when having passed through the mill.

ULTRAMARINE BLUE is considered the best in the list of blues, and almost any shade can be made by simply altering the ground over which it is put, for it is a transparent color, and is generally put upon a blue ground formed of Prussian blue; but Prussian blue is a hard pigment, and must be ground in a mill, or on a marble slab.

There are several other pigments which may be mixed without grinding, but all of these will be mentioned in their proper places.

CHAPTER III.

The Tools required in Painting.

It is not necessary to give a full list of the brushes used by the painter, for they are numerous, and only a few are required for ordinary work. A brush may be kept in good order for a year or more, and again be ruined in a very short time, for if once the paint or varnish is allowed to dry hard in the bristles or hairs, it will be a poor tool ever after. Many believe that they can wash the paint from a brush, dry it, and have it as good as new, but it is a fallacy. No brush washed with soap and water will have the same elasticity as before, and if it droops like a wet rag, in handling, good work can not be done. For painting around the house or on the farm, there is no necessity for the purchase of such fine brushes as a professional requires, and those only will be described which will be found serviceable and inexpensive.

For certain kinds of work, as, for example, to paint the outside of a building, or fence, a large-sized bristle brush and possibly a small "tool" will be needed. If it be a large job, that is, should there be a prospect of your using the tools for some time, it would be better to "get

good ones," for they are the cheapest in the long run. If, however, the job you have in hand is a short one, you will find brushes in the stores that will serve your purpose, and can then be cast aside, for a trifling sum.

A brush for such work is designated by the brush-maker according to its size: as 1 naught, 2 naught, 3 naught, etc.; the 4 or 5 naught sizes being about the required one, costing from $\$2.12\frac{1}{2}$ to $\$2.50$ each.

The small brush or "sash-tool" may be, say, No. 4, costing from fifteen cents to twenty-five cents.

The brushes suitable for such work as will be described in this book only will be noticed, for to give an illustration and description of *all* the tools used by the artist or the painter would swell this volume to twice the size contemplated.

The selection of a brush requires great care, for a poor brush is one of the most useless things one can think of. It not only spoils the work, but causes the loss of much material, excites the temper of the user, and is virtually so much money thrown away. It is our purpose at this point to describe the proper kind of brush to buy to insure satisfactory work.

Fig. 1 shows an Ordinary Paint Brush.

The ordinary paint brush used by painters, for either outside or inside work, is shown in Fig 1.

It is made either from selected Russia bristles or with gray centre and fine white bristles, the former being most expensive and a far better brush; but for common work the gray centre brush will answer every purpose. They are bound with wire, and the prices range according to

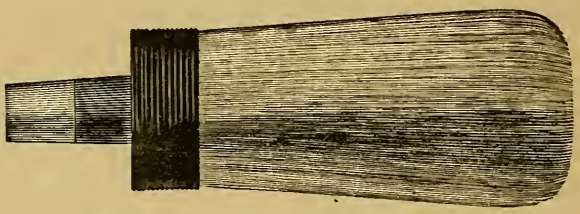

Fig. 2 shows Cheap Brush Bound with Twine.

size—from No. 6 down to 0 (naught), and from 0 (one naught) up to 0000 0000 (eight naughts). A four-naught brush, costing about $2.00, is about the size for general work.

Brushes bound with twine, as shown in Fig. 2, are cheaper, and suitable for painting outbuildings, fences and work of that kind. The cost is about $1.00 for a 0000 brush.

Fig. 3 represents a Sash Tool.

A sash tool, or small brush, shaped like that shown in Fig. 3, is necessary in all cases for cleaning up around corners, or for doing work where it is impracticable to use

the large brush. These are bound with twine, and cost from 15 cts. to $1.00; the size No. 6 being most useful, costing perhaps 25 cts.

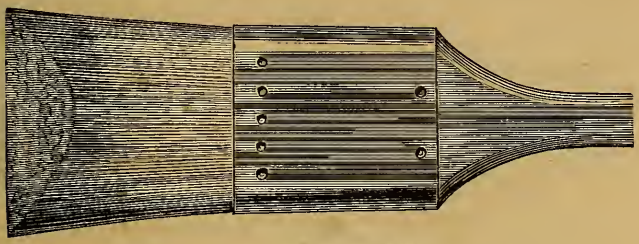

Fig. 4.—A Flat Brush with Chiselled Edge.

Flat paint brushes are preferred by some (see Fig. 4). These are "chiselled," or ground off on the sides to form a thin edge. They make excellent varnish brushes, and much of the work spoken of in subsequent chapters may be well done if such a brush is used. They are graded in

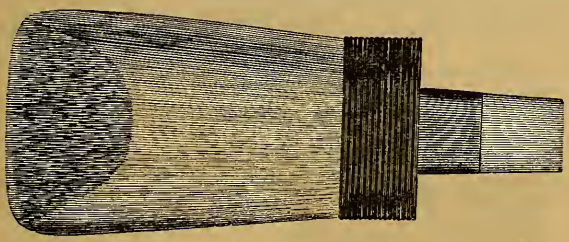

Fig. 5 shows an Oval Varnish Brush.

size by their width—as one inch, two inches, etc.—a $2\frac{1}{2}$-inch brush being large enough for most work, costing from 50 to 75 cts. each.

The oval varnish brush (Fig. 5) is made of fine French bristles, and in the hands of a professional will last a long time on best work. We have known a brush of this description to be in daily use for three years; but where they

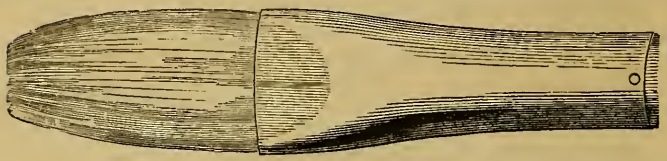

Fig. 6.—Round or Flattened Bristle Brush.

are used only a little they can not be expected to last so long, for they would not in such cases have the same care given them. The 0000 brush is a good size for general work.

A good brush for fine and small work is the bristle brush, round or flattened, as shown in Fig. 6. It may be used for painting, or as a companion to the oval brush just spoken of to clean up around corners, etc.

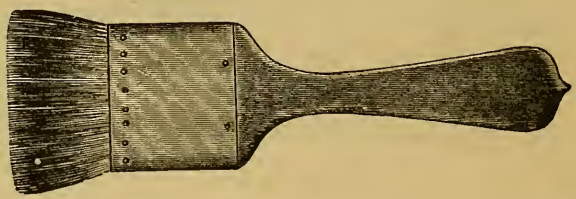

Fig. 7.—A Camel's-Hair Brush.

For fine color, such as ivory black, green, red, etc., a camel's-hair brush is best. (See Fig. 7). These are made

of camel's hair, bound in tin, and well fastened with rivets. They lay the paint very evenly and smooth, but are too soft for varnish.

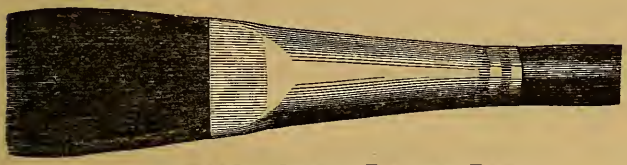

Fig. 8.—Camel's-Hair Brush in Flattened Ferrule.

For small work a brush shaped as shown in Fig. 8 will be found excellent. They are made of camel's hair, bound in a flattened round tin ferrule, and are not expensive.

Striping pencils are shown in Fig. 9. These are made of black sable hair, camel's hair, ox hair, and fine bristles,

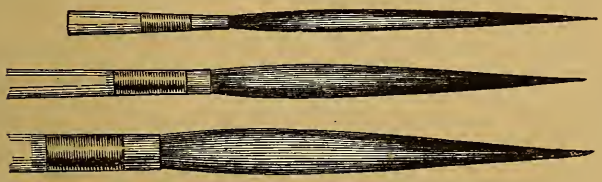

Fig. 9 shows Three Sizes of Striping Pencils.

bound in quills or in tin ferrules. The best are of sable hair, with the hair from $1\frac{3}{4}$ to $2\frac{1}{2}$ inches in length. Camel's-hair pencils will answer most purposes, and they are quite inexpensive, generally selling for from 5 cts. to 25 cts. each, according to size.

Lettering pencils are made in a similar manner, but the hairs are much shorter. Fig. 10 will give a general idea of their appearance. They are fitted to wooden handles, which may be purchased separately.

The hairs of a lettering pencil should not be over one inch long, and many prefer them even shorter. Black sable-hair pencils are best, and expensive, owing to the

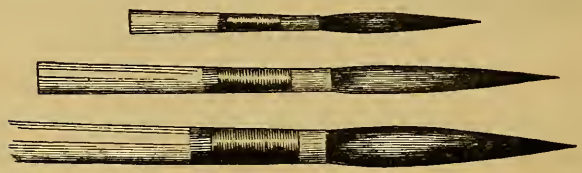

Fig. 10 shows Three Sizes of Lettering Pencils.

scarcity of the hair from which they are made, which comes from the tip of the tail of the Russian brown sable, an animal of the weasel family.

Ox-hair pencils are now extensively used by manufacturers of cheap furniture, and to some extent for other purposes. As the sales are constantly increasing, it is fair to suppose that they are giving satisfaction. But for fine carriage work they are rather too stiff and unyielding.

The lettering pencil is used for laying size, or color in scrolling; but for shading a scroll, a pencil with shorter hair is preferred.

Selecting Pencils.

Many people—even professional painters—when choosing pencils of camel's hair or sable, put them in the mouth

and draw them between the lips to judge of the shape or point; but this is a very injurious proceeding, for the warm spittle causes the hairs to crinkle and "crook up," in many cases spoiling the pencil. To choose a pencil, press the dry hair between the thumb and finger to flatten the pencil, then draw it downward, holding it up to the light meanwhile. You will find the hairs of a good pointed pencil to be of nearly uniform length, gradually thinned down, until a square end is formed; but if the hairs appear ragged, as if broken off—no two of a length—reject it as a poor tool.

The ends of striping or lettering pencils should never be cut across to square them, for the blunt end thus made makes a poor end, and good work can never be done with such a tool.

The Care of Pencils.

All pencils, either of hair or bristles, should be well rinsed, after use, in turpentine, and then well greased with a mixture of sweet oil and tallow to prevent them from drying hard; after which they should be put away in a covered box, out of the way of dust.

If by any means a pencil becomes crinkled or crooked, it may be made straight by simply greasing the hair, and then drawing it between the finger and a warm iron several times.

To soften a sable or camel's-hair pencil when it has

been allowed to dry up hard with paint, put some turpentine into a shallow dish and set it on fire. Let it burn for a minute until hot, then smother the flame and work the pencil between the fingers, dipping it frequently into the hot spirits, which will soften and remove the paint.

To make a striping pencil shorter, without unfitting it for its original use, take a piece of writing paper, about three-fourths of an inch wide, and wrap it around the pencil in the same way as in making a lamp-lighter, leaving the lower end rather loose, the upper end tied. By this method a pencil may be made as short as desired; and

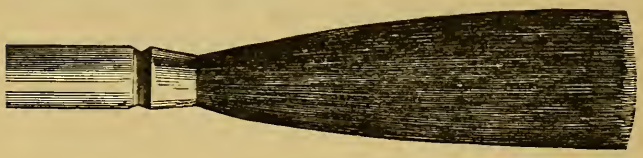

Fig. 11.—Broad Striping Pencil.

when you are done using in this form, remove the wrapper and grease the pencil before putting it away, and it will be as good a striping pencil as ever.

To make a broad stripe where the pencil is not large enough, tie two or three pencils together, using splints of wood to fill the space between the quills. It does not always pay to buy a broad pencil, such as shown in Fig. 11, for only one job, and by joining two or three as described a pencil may be made to suit the work, and then be separated as before.

A painter's duster (Fig. 12) is a very useful tool. A paint brush should not be used for dusting off work, for if used dry they quickly go to pieces, while an inexpensive duster will last a long time.

Having given a general idea of the brushes best adapted for the class of work treated upon in these pages, the manner of preserving them when not in use will next be described. All paint brushes should be kept suspended in water. Take a small tub and drive long nails through

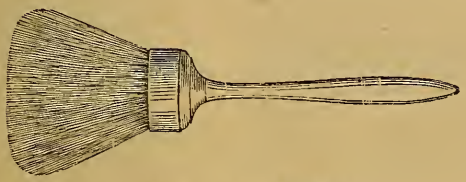

Fig. 12.—A Painter's Duster.

the staves, near the top; then bore a hole with a gimlet or small bit in the handle of the brush, and suspend the brush on a nail in the tub (see Fig. 13) with the bristles or hairs a few inches from the bottom. Put water in the tub until it just covers the hairs, *not the binding.* The water will prevent the paint in the brushes from drying, and with a little care brushes may be preserved for a long time.

Another plan is to have a tin box with a cover to it, the brushes being suspended upon a wire running through a hole in the handle, just so that the liquid in which the

brush hangs shall come a very little above the tin binding of the brush. (See Fig. 14).

It may be well enough, where *varnish brushes* are used for common work or farm implements, to keep them suspended in raw linseed oil, but no fine varnishing can be done with brushes preserved in that manner.

A varnish brush should never be put in water. Water

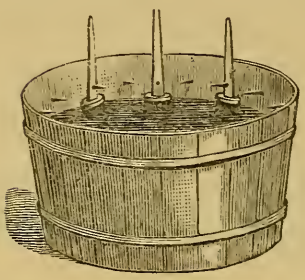

Fig. 13.—Device for Preserving Paint Brushes.

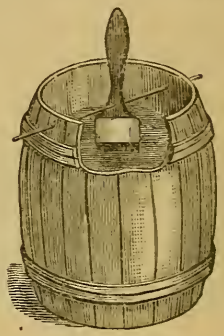

Fig. 14.—Another Method of Preserving Brushes.

causes the varnish remaining in the brush to turn white and form little white scales which are detrimental to clean varnishing, and when once in a brush it is next to impossible to remove them. The carriage varnisher would make sorry work of it if his brushes were taken from a bath of oil when about to varnish a coach body. "Pitting" (small holes in the surface like honeycomb), enamelling, and a dozen other troubles arise from having oil, turpentine,

or water come in contact with the brushes used for varnishing.

To Preserve Varnish Brushes.

The usual method of keeping a varnish brush is to suspend it in varnish by a wire running through a hole in the handle (as shown in the engraving, Fig. 14) within a tight-covered tin box, so suspended that the *varnish in which it hangs* comes just above the binding, all the hairs being covered. The same varnish as that in which the brush is commonly used is considered the best for the purpose, so that no foreign substance will be incorporated with that put upon the work. There are several good brush-keepers in market, and these are quite inexpensive, while some varnish-makers supply them gratis to their customers.

Varnish brushes should never be rinsed in oil or turpentine; but if by accident they get dirty, work them out on a clean board or painted surface. If the brush has become dirty by an unlucky fall to the floor, hold it at an angle toward the floor, in such a manner that when turpentine is poured upon it the spirits will not run up into the hilt of the brush, but will flow off, carrying with it the greater part of the dirt. After rinsing in this manner, strike the tin binding several sharp raps upon some hard substance, when the recoil or spring of the hair will cleanse the brush of turpentine; then rinse in varnish. In mak-

ing a hole in the handle care should be taken not to perforate the tin binding, for by so doing there is a liability that varnish will be admitted to the cement and soften it, causing the hairs to fall out.

To Bridle a Brush.

Nearly all the brushes used for plain painting require

Fig. 15.—Showing a Bridled Brush.

an extra binding or "bridle": that is, the extra binding is extended out over the bristles, about one-half their length, in order to prevent them from spreading as wide as they would otherwise. There are several ways of putting on this bridle. One is to wrap a short cord around as far as desired (see Fig. 15), and then secure it to the handle; but a better way is to take a piece of muslin just large

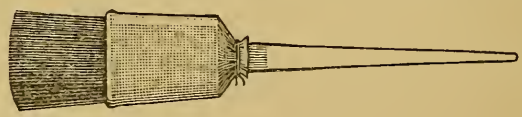

Fig. 16.—Showing another Method of Bridling a Brush.

enough to go around the brush, and wrapping it around, tie it at the place where the binding is to come, then turn it back toward the handle as you would turn a coat-sleeve

or stocking, and fasten all securely by tying a cord around the handle. Cut off the surplus muslin, and a neater binding could not be desired. (See Fig. 16.)

There are several patent brush-binders in market which serve a very good purpose—some of rubber, others of metal,—but the muslin plan appears to be best; and when the brush is worn down too short, the extra binding can be removed, and you will have a brush as good as new again.

How to Handle a Brush.

There are but few outside of professionals who fully understand how to manipulate a paint-brush, so as to make smooth work with ease.

Some grasp the handle in an awkward manner, and with a stiff wrist and long movement of the whole arm make what they think is the correct motion for spreading the paint; or perhaps they bear too lightly upon the bristles, and instead of producing a smooth coating, they "rag" and roll the paint up in streaks and patches.

We illustrate in the accompanying engravings, Figs. 17 and 18, first, the manner of grasping a large, round paint brush, and passing it over a perpendicular piece of work from top to bottom; and, secondly, from the bottom upward. It will be noticed that the hand is partly turned in moving upward, and the principal movement is in the wrist.

The wrist must not be held rigid, but be allowed all the

freedom possible; then, when the knack is once acquired, a good job of brushing can be done with the greatest ease.

Paint should not be put on *too sparingly* nor *too plentifully;* a medium quantity laid and smoothed over nicely is all that is required. A uniform coating should be made, not daubs of material in one place and very little in another, neither should the paint be worked after it has

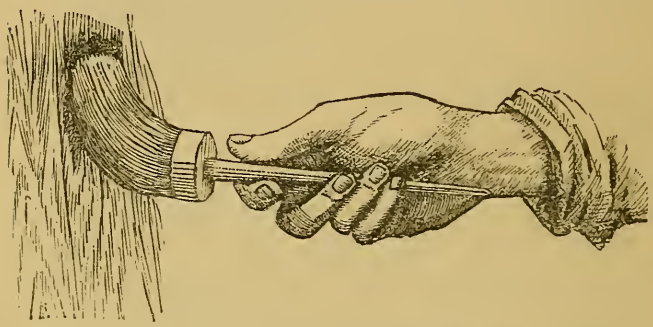

Fig. 17.—Showing proper manner of holding the brush for the down stroke in perpendicular work.

begun to "set" or harden, otherwise it will be streaked or show brush-marks.

The brush being dipped and filled with paint, it should be gently struck against the inner side of the tub to prevent the paint from running in streams from it when about to put it on the work, and the pot should be kept well wiped down upon its sides.

Always brush the work with the grain of the wood if possible, or the longest way of the part or panel, using the largest brush for wide parts, and finishing up around moldings in corners or on small parts with the sash-tool or small brush. The small brush is held in a very similar way to the holding of a pen, *i. e.*, between the thumb and

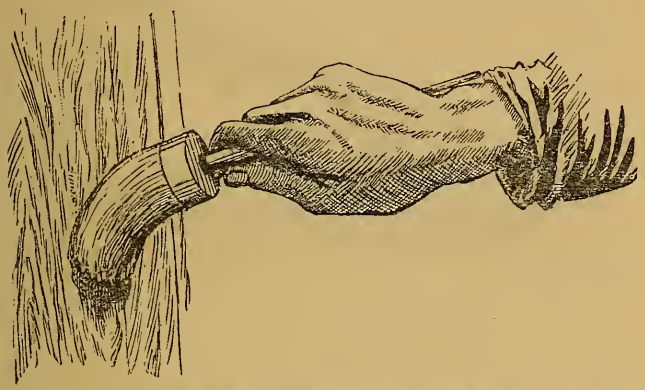

Fig. 18.—SHOWING PROPER MANNER OF HOLDING THE BRUSH FOR THE UP STROKE IN PERPENDICULAR WORK.

fingers, but the large brush could not well be handled in that manner.

Care should be taken to make as few laps as possible, and a panel or other part should be completed before another part is begun.

In painting ceilings, wainscoting, and woodwork where there are cracks to form a boundary, this should be taken advantage of, for then no laps will be made.

The varnish brush should be held as shown in Fig. 19; but varnish is laid on far more plentifully than paint, and must be worked less.

In painting a wagon gear, wheels, etc., it will be best to grasp the brush at the binding with the thumb and

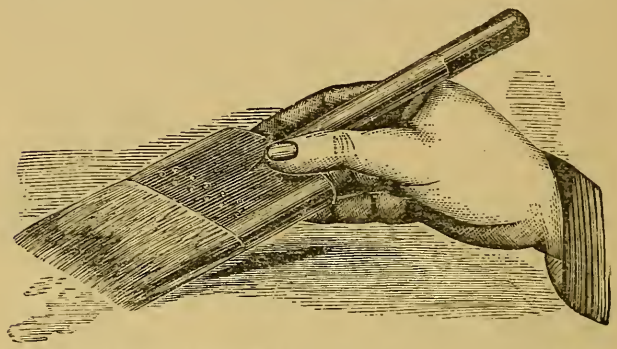

Fig. 19.—Showing proper method of holding the varnish brush.

fingers, so as to have a better command over it. By a little practice and a careful study of the engravings, one may soon become familiar with the best method of holding a brush.

CHAPTER IV.

Painting Farm Implements, etc.

The mower, reaper, harrow, plows, and hay-rakes of a farm should be kept well painted to preserve them from decay, and in this chapter it is proposed to disabuse the mind of the expense attached thereto, as well as to give directions how such work may be done.

Green is the most fashionable color for such tools, and we will tell you how to apply that first. Procure, say, two pounds of chrome green, medium shade (dry), costing about twenty cents per pound. Mix it to a thick, mush-like consistency with carriage-rubbing varnish ; then thin the mixture with turpentine just sufficient to have it work well with the brush. *Do not make it too thin* or the binding of varnish will be killed and the paint may be easily rubbed off when dry. A good plan is to test the paint on a piece of board, and add varnish or turpentine until it dries with a slight gloss—not too dead.

Green paint may be purchased ready mixed in either oil or japan, but I advise the use of dry color prepared as above directed, as it is less expensive and generally gives better satisfaction.

Brown is a very good color for farm implements, and is made by mixing a little lampblack with Indian red. Lampblack costs from three to ten cents a pound, and Indian red about twenty cents per pound (dry colors). It is generally best to mix the colors separately, then add the black to the red in small quantities until the desired shade is obtained, using carriage-rubbing varnish and turpentine as with the green.

Blue is made with ultramarine blue and white-lead. Ultramarine usually costs about fifty cents per pound, but it is light, and a pound will cover a large extent of surface. Prussian blue is less expensive, but unless purchased ready mixed it will have to be ground in a mill, and it will be better for those having no mill to use the ultramarine.

In order to give the reader a fair idea of the colors which can be used on the work under consideration as well as on most other work, a list—with the average price per pound of colors ground in japan, and which require simply a thinning with turpentine to make them work nicely under the brush—is given below:

List of Colors ground in Japan, with Prices per Pound.

Prussian Blue,	$1.20
Ultramarine,	1.00
Chrome Green,	.55
Milori Green,	1.05

Tuscan Red,	.70
American Vermilion,	.50
Umber, Raw and Burnt,	.37
Sienna, " "	.35
Chrome Yellow,	.50
Golden Ochre,	.45
Venetian Red,	.12
Paris Green,	.30
French Ochre,	.18
Lampblack,	.25
Ivory Black,	.50

Cleaning before Painting.

In painting farm implements care should be taken to thoroughly clean every part from dirt, scrape off any loose paint with an old knife, and rub each part well with No. 2 sand-paper. Then, after a good dusting off, begin the painting, laying the paint evenly and with no more brushing than just sufficient to cover the surface. Many people think that it is necessary to apply but a trifling amount of paint, and then to rub it well in with the brush, but that is not the proper way. Apply the paint freely and level it down *(this rule applies to any kind of painting)*, after which apply a coat of medium quality carriage-finishing varnish.

To Paint a Business Wagon.

The painting of a wagon is a more particular job than the painting of farm implements, for a wagon to be well done must be varnished, although it is best to varnish anything which is painted with "quick color," *i. e.*, the paint described above, for durability can only be secured by varnishing.

To paint a wagon, first place a barrel or other support under each axle, so that the wheels may be free to turn; then take off the wheels and set them aside, while the running parts and body are being prepared by sand-papering sufficient to thoroughly clean them with No. 2½ sand-paper. This part of the work should not be neglected, for the better the first cleaning, the better the painting will be.

The body and running part being well sand-papered, put on the wheels and give them a good rubbing with sand-paper; clean off all grease which may be on them with benzine or turpentine; and it is an excellent plan where shellac varnish is at hand to coat over the hubs and such other parts where grease has been, with that before painting. It dries quickly, and prevents all trouble from the grease working through the paint. A thorough dusting now brings the work up to the painting.

The colors best adapted for wagons are as follows:

COLORS FOR PAINTING WAGONS.

BODY—Green,	. .	GEARS—Yellow or Red.	
" Brown,	. .	"	Vermilion.
" Red,	. . .	"	Cream-color.
" Olive Green,		"	Indian Red.
" Indian Red,		"	Yellow or Cream-color.
" Black,	. .	"	Red or Brown.

To make the paint for such work there should be a small quantity of raw linseed oil added to cause the color to spread nicely, but too much oil will be found worse than none at all, and its use is restricted to no more than a gill of oil to a quart of paint. Carriage-rubbing varnish or brown japan and turpentine are the principal vehicles employed, and the paint may be mixed as heretofore directed for farm implements.

Begin the work by painting the body,—the wheels having been removed,—after which the axle-beds, bars, reach, etc., and lastly the wheels. Let the job stand until the next day to dry. It is perhaps needless to remark that the work should be done under cover, and in a place as free as possible from dust.

Now, with putty made by mixing some dry pigment (as near the color used as possible) with brown japan to a stiff dough, putty up every imperfection, such as chipped-off spots, cracks, and dents, using a square-ended putty knife. Smooth down and level over all such places in

both body and gears, and let the putty dry. After the putty is well dried, rub all the putty spots over to smooth them, with No. 2 sand-paper, and apply the second or finishing coat of paint, mixed as before. Let the second coat dry well, which it will do in from eighteen to twenty-four hours. Then take some carriage-rubbing varnish in a cup, and add to it a little of the paint as used on the body, and in another cup of varnish add a little of the paint as used on the gears. This forms what has before been described as "color-and-varnish," and it should be applied in the same manner as clear varnish, *i. e.*, with a varnish brush.

A coat of "color-and-varnish" over the paint prepares it for striping, lettering, or ornamenting, if these are desired.*

The striping, etc., being done, a coat of varnish will complete the work (see Chapter on varnishing).

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* "The Complete Carriage and Wagon Painter," price $1, M. T. Richardson, publisher, New York, gives full details for striping, lettering, and ornamenting.

CHAPTER V.

Mixing and Applying Colors.

Having mentioned most of the pigments, the vehicles for mixing paint, and the tools necessary for plain painting, directions will now be given for making the various colors and applying them. It should be understood, however, that no definite rule can be laid down regarding the *quantity* of any one pigment to be added to another to form a certain color, for the strength of pigments varies greatly, and what might answer well in one case would not do at all in another.

The eye of the paint-mixer must be the judge, and it is always best to add one ingredient to another in very small quantities until the desired shade of color is reached. The formulas here given will serve as a good general guide, and any one may, after a little experience, learn to change the proportions to suit either the strength of the pigments, or his own taste.

Brown is described in scientific works as "a warm, broken color, of which yellow is a principal constituent"; and under this classification we find Umber, Sienna, and several other earthy pigments; but the color called *brown*

by the majority of people, is virtually a dark red. If a red pigment, say Indian red, Tuscan red, Venetian red, Vermilion, etc., be added to black (either lampblack or ivory black), the result will be what is generally known as *brown;* and as this volume is intended more particularly for the use of those who are not professionals, and consequently not experts in the "tone" of a color, it will, perhaps, suffice to say, that to make a nice brown, take of Indian red a sufficient quantity (say a half pound, for it is a very strong-bodied color), mix it to a cream-like consistency with brown japan, and stir all well together. Next, take a half pound of lampblack and mix that with brown japan in the same manner. Now add the black to the red in small quantities, stirring it briskly meanwhile, until the shade of brown suits the eye.

The more black that is added the darker the brown will be, and *vice versa.* When the proper color is obtained, add turpentine to the mixture until it is of a consistency to be easily spread with the brush. This paint will dry hard in half an hour, and will be "dead"; that is, have no lustre, and it should be varnished over with carriage-rubbing varnish to bring out its beauty.

This brown paint is suitable only for *inside work,* unless two or more coats of varnish are put over it; but to make it durable on work to be exposed to the weather, and then to be varnished with but one coat, add to the mixture one gill of raw linseed oil to each pint of paint.

Best Paint for ordinary Household Furniture.

For household goods such as chairs, tables, or other furniture, the paint described above cannot be excelled, as it has the appearance of hard wood ; but if a more elaborate job is desired, proceed as follows :

After the "dead" color has been applied and is dry, take a piece of sponge or a rag, and dipping it into the black paint, *lightly* touch it here and there, to make a sort of grain or dark spots as seen in rosewood. Then, after all is dry, varnish over it with No. 1 Furniture Varnish. A still richer effect may be given to furniture as follows :

Imitation of Rosewood for Furniture.

Paint the work with a light shade of brown (that is, don't add so much black), grain it with the sponge dipped in black ; then, instead of applying clear varnish, add to the varnish just enough carmine or lake (ground in japan) to color the same, and apply it the same as if it was clear varnish. This "glazing" being transparent, does not solidly cover the groundwork, and the result will be a very fair imitation of rosewood.

Paint for Flower-Stands.

Many entertain the idea that a flower-stand should be painted green, but those who have used brown instead, have generally been pleased with the result. Bright green will cause many plants to present a dull and lifeless

appearance, while the brown color brings out in pleasing contrast the green foliage of the plants.

Wash-tubs, Plows, Rakes, etc.

Wash-tubs and many other useful household fixtures are improved in appearance by this same brown color, and upon all such work the "quick-drying" or "dead" color should be put, and then it should be varnished with carriage-rubbing varnish.

For plows, rakes, and other farm implements, the *oily color*, as previously described, should be used, for they are to be exposed to the weather, and unless several coats of varnish is applied, the paint would soon wear off.

Brown Paint for Floors.

Brown for floors may be made to wear well by simply adding a little No. 1 Furniture Varnish (say in the proportion of one quart of varnish to three quarts of paint) to the "dead" color previously described (not the oily color), for oily paint on a floor is sure to scratch easily, and rub off.

Green comes next in order, and it may be used on many household fixtures in preference to brown, as well as on farm implements and machinery.

Chrome Green, as purchased in the dry state, will give an excellent shade for ordinary work. There are three shades of chrome green, namely: light, medium, and deep;

and the purchaser should look well to it that he gets the proper shade. Chrome green may be mixed in the same manner as in the instructions given for *brown*, *i. e.*, with japan as a base, and then thin with turpentine. If for outside work add a gill of raw linseed oil to each pint of paint.

MILORI GREEN is a very handsome bluish shade of green, and this may be purchased dry, or ground in japan. The latter is best, for the superior grinding given the paint by the paint manufacturer causes it to spread nicely and to be free from all grit.

GREEN may be made by mixing chrome yellow and Prussian blue. The two colors should first be ground or mixed separate, and then added together until the proper shade of green is obtained. Prussian blue must be ground, for it comes in hard lumps from the manufacturers. The use of ready-ground blue is therefore recommended. The yellow may be crushed fine, but it will also be better for the purpose if ground in a mill.

COMMON GREEN may be made by mixing chrome yellow and black. In making a green by the use of yellow and blue, the yellow should be as free from red, or orange, as possible, and therefore lemon yellow will be found best.

OLIVE GREEN is made with chrome yellow, black and red. For a cheap olive green, take yellow ochre, lampblack, and venetian red. For a rich color, use orange chrome yellow, Prussian blue, and vermilion.

Green and Leather Color for Farm Implements.

For farm implements or machinery, a bright green is an excellent color; the nuts and bolt-heads being made black, and the principal panels or large parts striped with gold bronze or its imitation, *i. e.*, yellow and white mixed to the proper shade. A perfect gold color is made with white-lead and orange chrome yellow, tinted with blue and red.

A very neat and fashionable color, known as Le Cuir or leather color, is extensively used on farm wagons and implements. It is made by mixing two parts of Burnt Sienna with one part Burnt Umber, and tinting it with white. The Umber and Sienna are mixed together and "wet up" with brown japan to a thick paint-like consistency, then white-lead is added to bring about the proper shade.

Vermilion (English) should be mixed with a quick-drying carriage varnish, and in no case with oil, as the oil tends to darken the color. Japan may be used if it be of a very light color; but the ordinary brown japan will injure the purity of the color, and therefore pale carriage varnish is best. When mixed quite thick with varnish, thin with turpentine.

Vermilion (American) produces the best results when diluted with whiting, for then it works better, and covers more solidly, one coat often being sufficient, where two

coats would be necessary if the whiting was not added. To mix American Vermilion for a farm or lumber wagon, mix the dry vermilion with brown japan and raw linseed oil, equal parts, to a mush-like consistency; then thin it with turpentine. Next take one-half the quantity of whiting in bulk (not weight) and mix it to a stiff mush with raw linseed oil, and add it to the vermilion. Vermilion being a heavy pigment, settles rapidly to the bottom of the vessel, and also separates from the vehicles with which it is mixed; but the whiting prevents this, and prepared as described, it may be laid as smoothly as any paint.

Indian Red for Farm Wagons and Implements.

Indian Red, or Tuscan Red, one and the same thing, is an excellent paint for wagons and farm implements. It is a dark red, nearly approaching maroon. It may be used without grinding on such work, mixed with brown japan and a little raw oil.

Pigments which may be Used without Grinding.

The following list comprises those pigments which may be mixed directly, without the necessity of grinding them in a mill. A good plan, however, will be to strain such paint through coarse muslin or flannel, to take out the lumps if any remain after a good stirring:

All Dry Pigments.

Venetian Red.	Vermilion.
Ultramarine Blue.	Indian Red.
Chrome Green.	Chrome Yellow.
Milori Green.	Umber (Burnt and Raw.)
Quaker Green.	Sienna (Burnt and Raw.)
Lampblack.	Yellow Ochre.

Mixtures.

White-lead.—Mixed and ground in oil.

Stone Color.—Five parts white-lead, two chrome yellow, and one burnt umber.

Drab Color.—Add burnt umber to white until the desired shade is reached.

Lilac Color.—Tint white-lead with vermilion and ultramarine blue until suited with the color.

Purple Color.—The same as lilac, using more red and blue.

Violet Color.—The same as purple.

Chestnut Color.—Two parts red, two chrome yellow, and one part black.

Flesh Color.—Tint white-lead with yellow and red.

Fawn Color.—Tint white-lead with yellow and red, and add a little burnt umber.

Plum Color.—Mix ultramarine blue and vermilion, and add a little white-lead.

Bronze Green.—Add a little umber and black to chrome green.

Olive Brown.—Add a little burnt umber to lemon chrome yellow.

Cream Color.—Tint white-lead with red and yellow.

Lemon Color.—Add lemon yellow to white lead.

Copper Color.—Add a little red and black to orange chrome yellow.

Lead Color.—Tint white-lead with a little black and ultramarine blue.

Gray Color.—Tint, white-lead with lampblack.

French Gray.—White-lead tinted with black and red.

Oak Color.—White-lead colored with yellow ochre.

Brick Color.—Add yellow ochre to Venetian red.

A list of many more colors might be presented, and can be found in "The Complete Carriage and Wagon Painter";* but as they require grinding in a paint-mill, it is not deemed necessary to make mention of them here.

All the above formulas should be carried out by mixing each color separately, then combining them, for if done in any other manner no definite result will follow.

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* M. T. Richardson, Publisher, New York.

CHAPTER VI.

To Paint the Side Walls of a Room.

To paint the side walls of a room is to many a laborious and expensive job; but when one is acquainted with the work, it does not seem to be so great a task, and therefore we will endeavor to tell just how to begin and how to finish a wall.

Supposing the wall to have been kalsomined or whitewashed. As much of the old coating as can be removed must first be taken off. Kalsomine can be washed off with water, but whitewash must be scraped with a putty-knife if thick, or sand-papered over with No. 3 sand-paper, if thin. The cracks and holes, if any exist, should be neatly filled with plaster-of-paris, wet with water to a mush-like consistency, and smoothed down. Then, having dissolved half a pound of glue in a quart of water by boiling, reduce it with water to a water-pail full, and with a kalsomine or whitewash brush, give the wall a good coating of the size thus formed. This will prevent the paint from striking in in spots, and, furthermore, it is an economical proceeding, for less paint will be required.

Give the size ample time for drying hard, and meantime get the paint ready.

Take white-lead ground in oil, and thin it to a working consistency with turpentine, *i. e.*, so it will spread easily with the brush; but not too thin. Add one gill of brown japan to every quart of the mixture; stir all well together, and the paint for the first coat is ready.

The size being dry, begin at one corner of the room, laying on the paint plentifully, and brushing it just sufficient to spread it evenly and smooth. If the paint be rubbed too much with the brush, it will show brush-marks and streaks, which should be avoided as much as possible. The best brush for wall painting is the flat bristle brush about four inches in width. (See chapter on Brushes.) Go over every part of the wall carefully, laying on and spreading the paint, until all is done; then give at least twenty-four hours for drying.

The second, and finishing coat (for a good job can generally be made with two coats), is now in order, and it is possible that a "tint" is desired. Tints are colors added to white, and to mix them the white-lead should first be thinned to a cream-like consistency with turpentine, and the staining ingredient—that is, any desired dry color—should be mixed in a similar manner in a separate vessel. Then add the stain little by little to the white until the tint required is obtained. It must be remembered that some pigments are very strong, and a single drop will

change the tint, while other pigments being weak, will require a much greater quantity to produce the desired effect.

Tints for a Wall.

The tints best adapted for a wall are:

White	tinted	with	Ultramarine blue.	Blue.
"	"	"	Raw Umber	Drab.
"	"	"	Chrome Green	Green.
"	"	"	Orange Chrome	Cream.
"	"	"	Burnt Sienna	Light Buff.
"	"	"	Black and Blue	Gray.

Either of these being chosen, mix the paint as directed for the first coat. Then add a gill of carriage-rubbing varnish to every quart of the mixture to cause it to dry with an egg-shell gloss, *i. e.*, neither "glossy" nor "dead." Lay the paint on evenly, and the work will be complete.

To Paint the Inside Woodwork of a Dwelling.

The woodwork of a dwelling is painted *white* in the following manner: Take from the keg of white-lead enough to complete the room, and put it in a paint-pot. Cover well with turpentine, stir into a thin milk-like consistency, and set aside to settle. The white-lead will settle to the bottom, leaving a good share of the turpentine and much of the oil it contained upon the top. Pour the liquid off, and thus you "wash" the oil from the lead.

White-lead mixed with oil will, when put upon interiors, turn yellow, particularly if the rooms be darkened, as parlors usually are, and by washing out the oil much of that trouble is obviated. When the lead is thus prepared, thin it with turpentine, and add, say, a teacupful of any light-colored carriage varnish to each quart of the paint to give it the necessary binding qualities.

This paint may be put on for all the coatings necessary to cover the ground solidly, although it is a different mixture from that used by the professional house-painter. He would use more oil, perhaps, but the method described will give better results than any other way of procedure.

Some desire a better white than white-lead will produce; if so, take zinc white instead, and use it in the same manner; and then, if it is desired to have a glossy surface, mix with the zinc white an equal quantity of white damar varnish (the mixture is then called China gloss), and apply it as the finishing coat, over either the white-lead or zinc white.

The panels of doors, etc., may be tinted to give a good effect, and by referring to Chapter V. the reader will learn how to mix tints. It is fashionable just now to lay on a pale French gray to the principal parts of the woodwork, and then make the panels a shade or two darker.

White for Exterior Use.

For white work on houses, etc., to be exposed to the

weather, mix white-lead as it comes from the keg, with either raw or boiled linseed oil, and add brown japan, in the proportion of a pint to a gallon of paint, to cause it to harden well.

White for Wagons, Sleighs, etc.

To paint a wagon white, great care must be taken to keep it white from the start, and to be clean in all the operations. The priming should be white-lead mixed with raw oil and a tablespoonful of brown japan to each pint. The rough stuff—if any be used—should be made of white-lead (dry), one part; pulverized soapstone, two parts; ground pumice-stone, one part; and mix with brown japan and turpentine, equal parts; then add a gill of raw oil to each pint of paint.

When the job is rubbed out of rough-stuff (see chapter on Painting Buggies), apply two coats of pure white-lead, washed, as before directed. Follow this with "color-and-varnish" made of keg lead one part, zinc white one part, and grind in rubbing varnish. When that is dry, and has been nicely rubbed with pulverized pumice-stone, apply a second coat of "color-and-varnish" made in the same manner, but substituting a finishing varnish for the rubbing varnish. When this coat is dry, give the work a gentle rub with pumice-stone and water until a nice egg-shell gloss is obtained; wash off; put on the striping, lettering, or whatever is desired, and then pencil-varnish

the stripes or letters, leaving the white ground untouched. This will give a beautiful white job, and one far more durable than if varnish was spread over it as with other colors.

The directions given for brown, green, white, etc., are sufficient to enable the student to use any of the colors which require no grinding ; but the finest colors are made by mixing and grinding them in a paint-mill. If much painting is to be done, that is, fine work, it will be well to either purchase a paint-mill (the prices of which range from $5 to $25), or to use the ready ground colors put up by manufacturers in tin cans, ranging from one-half a pound up.

Prepared Colors.

The prepared colors best adapted for general work are ground fine, mixed in brown japan (not oil), and to make them ready for use it is only necessary to observe the following rules :

Take from the can enough paint to do the job in hand, and stir well in the cup or tub before thinning ; then add a small quantity of turpentine, stirring all the time, and adding little by little until the paint is smooth and uniformly liquid. Next, add a very little raw linseed oil—say two tablespoonfuls to a half-pound of paint ; or, if preferred, the same quantity of carriage-rubbing varnish may be used in place of the oil.

Colors of this class should be limpid enough to spread nicely with a camel's-hair brush. The prepared colors are excellent in forming tints, for being ground fine they readily assimilate with white, and a lesser quantity will be required. However, where much work is to be done they are too expensive, as, for example, ultramarine blue (dry) can be bought for 25 cents per pound, the japan necessary to make a pound of dry color into paint is worth, say, 25 cents, but the price of a pound of prepared ultramarine blue is $1. You can make *two* pounds of this paint for 50 cents.

CHAPTER VII.

Cleaning House.

When the time for the annual house-cleaning comes around it frequently becomes necessary to have rooms painted and kalsomined, and perhaps papered. In the absence of a professional it is often found impossible to have such work properly performed, and even when the professional is present, it may be desirable, from motives of economy, to do the work yourself, provided you know how.

Renovating the Walls and Ceilings.

The first thing that demands attention is the thorough renovation of the walls and ceilings. These may be either painted, kalsomined, or whitewashed. The first being the best and most expensive; the second generally preferable, on account of its ready application and durability of color; the last objectionable, except in the poorer class of rooms, or as a disinfectant.

Painting a Plastered Wall.

The painting of a plastered wall or ceiling calls for some skill in the manipulation of the brush so that

streaks, runs, or heavy flows may not appear. The paint for such work has been fully described in the chapter on Mixing Paint, to which the reader is referred.

Kalsomining.

The kalsomining of a wall or ceiling is quite a simple task, notwithstanding the endeavors of professionals to create the impression that such extreme care and skill are required as to make it impossible for an ordinary workman or workwoman to make a respectable-looking job.

Kalsomine is simply the name given to a mixture of size and whiting, or other pigment, and this is still further dignified by the high-sounding title of "Fresco Painting."

True fresco painting is seldom, if ever, seen in this country. It consists in intimately intermingling coloring substances with the plaster while the latter is still wet. The work is laborious, and requires a great amount of time to execute, as well as a thorough knowledge of the art; the plaster being spread in patches—no more being put on at one time than can be nicely colored before it dries—then an additional patch of plaster is joined to the first and colored, and this process is continued until the wall is covered.

Kalsomine is a sort of "distemper painting" when left plain, and when ornamented with flowers, vines, lines, etc., it is called "fresco," as before mentioned.

Preparing the Walls.

To prepare the wall or ceiling the old coloring matter must first be removed. If this is kalsomine, it may be washed off with water; if lime, it should be scraped or sand-papered off, after which the wall should be well brushed over with "size," to prevent the muddy or streaky appearance frequently seen.

Recipe for Preparing the "Size."

To make a "size" that will neither rub up or scale off under the kalsomine, take one pound of good bar soap, one pound of light-colored glue—the powdered, or comminuted glue, will be found the handiest to use—and one pound of alum; dissolve each ingredient separately in one quart of boiling water; strain the soap and glue in a bucket, and add the alum solution slowly, so that it will not effervesce too much; then add one quart of clear cold water, and the "size" is ready for use. When put on properly it should cover 500 square feet of surface. The "size" thus made is put upon the wall plentifully with a flat brush, such as is used for kalsomining (see engraving, Fig. 20), and should dry thoroughly before any attempt is made to apply a coat of kalsomine over it.

To make Kalsomine.

Take 15 pounds of good Paris white, mix it up with warm water, using the hands to crush the lumps and to

thoroughly intermingle the particles until it presents a creamy appearance. Then add a half pound of light-colored glue previously dissolved in about three pints of boiling water, and strain all through a fine sieve; dissolve a half pound of bar soap in one quart of hot water, and a

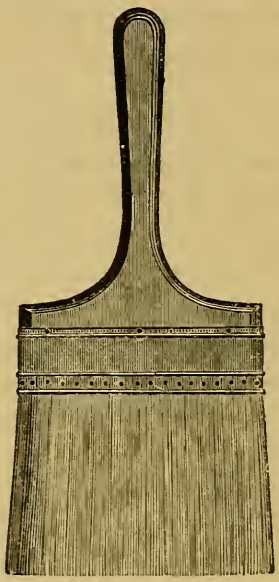

Fig. 20 shows a Kalsomine Brush.

half pound of pulverized alum in a pint of cold water; add the soap and alum solutions to the white. To improve the whiteness, or take off the yellowish hue, wet up a little ultramarine blue in water and add it to the

mixture, until the color is quite bluish; for the mixture will dry out many shades lighter than it appears in the bucket. Or, if any particular tint is desired, any colored pigment may be thus wet up and added to produce the desired effect.

The following colors may be obtained of almost any large dealer in paints, etc., ground in water and ready for use:

To make Tints.

Pink.—Add rose pink or lake to the white.

Gray.—Add celestial blue and rose pink to the white.

Orange.—Add Dutch pink and lake to the white.

Gray.—Add ultramarine and black to the white.

Straw.—Add Dutch pink or yellow to the white.

Either whiting, dry white-lead, or Paris white may be used as a base in distemper tints; but we are now considering more particularly the coloring of kalsomine, as mixed above.

In addition to the tints there are several varieties of "self-colors," or tones, obtainable by admixture with white, viz.:

Pea Green.—Add chrome green or Brunswick green to white.

Sage Green.—Add yellow ochre and Antwerp blue to white.

Duck's-egg Green.—Add Milori green (deep) or ultramarine blue and chrome green to white.

Olive Green.—Add yellow ochre and Prussian blue, or yellow, black, and red to white.

Blue.—Add a large share of ultramarine blue to white.

Blue.—Add indigo to white.

Purple.—Add ultramarine blue and lake or rose pink to white.

The proportions must in all cases be determined by the requirements, and are generally decided by the furniture or hangings. The strength or body of each pigment should also be taken into account,—a very small quantity of one variety of pigment doing the work of a much larger quantity of another. As, for example, Prussian blue will be found much stronger than Ultramarine blue ; but the tint will verge on to a greenish blue when the former is used, while Ultramarine will give a clear rich sky blue.

The kalsomine having been mixed as directed, and colored if desired, should now be set aside to cool, when it will assume a jelly-like appearance ; if not, the glue is not of the best, and more should be added, although it is not well to have too much glue in the mixture.

Prepared Kalsomine.

In this connection it may be well to add that of late years an extensive business has grown up in what is called "Prepared Kalsomine." By a special process the glue and tints are mixed with the whiting in the dry state, and the kalsomine is put up in small packages all ready for instant

use, and can be obtained of almost any tint desired. In using prepared kalsomine, which can be purchased in almost any paint store, there is this advantage, that no time is lost in mixing, and should it happen that not enough is wet up to complete your job, no difficulty will arise in matching tints,—an important point with the amateur kalsominer.

The brush shown on page 54 (Fig. 20), is, as will be noticed, unlike the common whitewash brush. Its whole width is well filled with bristles, and forms simply a very wide, flat paint brush. The usual width is from 6 to 8 inches, and prices range from $1.50 to $4.00 each.

The movement of the brush in kalsomining should not be the same as in painting or whitewashing,—*i. e.*, in parallel lines with the surface worked upon. A small quantity, yet sufficient to wet over a space say a yard square, should be taken upon the brush, and well spread over the wall in every conceivable direction,—that is, the brush should be moved in curves, circles, and irregular lines, never straight,—and when the space is well levelled down, in the manner indicated, it should be left to dry, and another space next adjoining be taken in hand, continuing thus until all is done. Never allow one part to dry before a connecting space is coated, or laps will be apparent. On a very large ceiling or side wall it is always best for two or more to work, and the quicker the work is done the better it will appear. The ceiling should always be kal-

somined first, for there is a liability of spattering the side walls, and if these be done first and spattered over, no after-operation will entirely remedy the trouble.

The plain work of kalsomining being now complete, it may be that the operator will desire to indulge in a little ornamentation, and this is "a knack" easily acquired if one will set his mind upon it. It is not expected that every one possesses sufficient artistic taste to design and ornament, and it would be a waste of time to endeavor to teach the art in so small a space. It will be best, therefore, to give directions for the use of designs ready prepared in stencil, and these may be procured for a very trifling sum, say from 15 cents to 50 cents each. A few such designs are shown on page 59. The stencils are cut in heavy paper, and with care will last a long time.

To make Stencils for Ornamenting Ceilings.

To make a stencil, providing the operator is competent to draw a fair design, take a sheet of well-calendered paper, such as highly finished writing paper or foolscap. Fold it in the centre. Then, with the crease thus formed for the centre of the design, draw on one side of the fold one-half of the pattern with a soft lead-pencil. Fold the sheet with the marks inside, and laying it on a smooth surface rub over the pencilled portion with any smooth hard substance, and the marks of the pencil will be transferred, making the whole pattern. Or, the marks first

made may be cut out of the folded sheet if preferred, but the single cut will generally give the best results. Now lay the paper on a piece of glass, and with a very sharp penknife cut out the different parts, being particular to

Fig. 21.—Stencil Designs.

leave bars (as shown in the engravings, Fig. 21) to hold the several parts together.

The brushes best suited for stencils may be purchased

at the paint stores; but in case they are not easily procured, take a good-sized camel's-hair pencil and cut it square across, leaving the hairs about one-half an inch in length. A shaving brush may also be used, by simply wrapping around it a strong cord until the bristles are made the proper length.

Where a stencil pattern is to be frequently used, it is best to varnish the paper with shellac varnish to prevent the absorption of liquid from the colors and the rotting of the paper.

The colors for stencilling are best purchased ready ground in size. The following list embraces those best adapted for the work, and the average price therefor:

Chrome Yellow,	35	cents	per pound.
Silk Green,	35	"	"
Indian Red,	25	"	"
Drop Black,	20	"	"
Vandyke Brown,	20	"	"
Burnt Sienna,	18	"	"
Raw Sienna,	18	"	"
Burnt Umber,	18	"	"
Raw Umber,	18	"	"
Venetian Red,	15	"	"
French Ochre,	10	"	"

In using the colors it is a good plan to have at hand a piece of pasteboard, or a dry pine board, on which to rub

the brush, to prevent so much color being applied as to make the edges of the stencil thick or ragged.

The stencil plate should be frequently cleaned, and this work must be carefully done, or the small bars or points may be injured and the stencil ruined.

Long stripes of any width may be run on, not as a carriage striper would run them with a striping pencil, but by the use of a straight-edge and a flat, bristle pencil, known in the trade as "artists' pencils" (see Fig. 22).

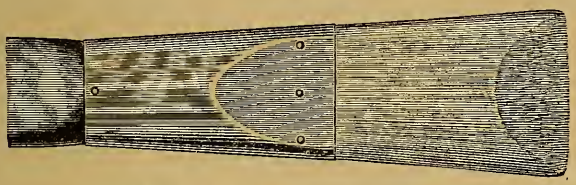

Fig. 22 shows a Chiselled Artist's Pencil.

The practiced hand can draw a very correct stripe. This should not be attempted by the novice until by repeated practice he is certain of good results.

A plaster cornice may sometimes be colored in tints to greatly improve it, and this work will be found quite easy, owing to the sharp edges it presents to form the boundary of the lines.

The wall and ceiling having been completed, the painting of windows and doors is now in order, and the reader may learn how such work is done by referring to Chapter V., in which the mixing of tints, etc., is fully explained.

Paper-Hanging.

It may be desirable to paper the side walls, and a few words on the hanging of paper will not be amiss, just here. Most wall-paper is provided with two margins, and the first thing in order is to cut from the *right-hand* side all the margin, leaving the left side to form the under-lap. The matching of figures must next be taken into account, particularly if it be a large figure, otherwise a waste would occur on each length cut off. A very little study will enable one to know just how to begin the cutting.

Paste for Hanging Paper.

The paste for this purpose is best made of rye flour, but ordinary flour will do very well. Mix the flour with water to the consistency of milk, being particular to crush out every lump, or else strain the mixture through coarse muslin or a fine sieve; put it into an iron or copper vessel, and set it over the fire to boil; stir constantly until it thickens and turns yellowish, then take it from the fire, and add cold water until the mass is about the consistency of cream. Allow it to become *perfectly cold* before using, for warm paste will penetrate the fibre of the paper too quickly.

Now, having a long table or wide board several feet in length, lay upon it one of the cut pieces, back up, and quickly spread the paste evenly over every part with a

large flat brush, similar to those used for kalsomining. The ends of the paper may be folded over, the pasted sides together, so that it can be lifted and carried to the wall without difficulty. Placing the top edge near the ceiling (a proceeding which need not be done in a particular manner, for the frieze or border will cover the ends of the paper at the top), gently unfold the paper and allow it to hang down; then with a soft cloth, a clothes brush, or a whisk broom smooth out and pat down all wrinkles, etc., until the paper lies smooth and in its proper place. The bottom end which abuts the base-board, may then be scribed off with the point of the shears, and afterward cut to conform with any irregularity at that point. Where a dado is to be put on, the lower end of the paper may be left long enough to be covered by the paper forming the dado, which is in many cases at least two feet in width. The frieze or border is generally printed with from four to eight strips on one width of paper, and to cut these properly, the paper should first be cut in lengths of, say, six feet, then laying it upon the pasting-board or table, spread on the paste over all the paper. Now carefully fold one end over to one-half the length of the paper, and then the other end; this brings the borders back to back, when they may be trimmed and cut, giving in this manner but one-half the work of cutting, and allowing the narrow strips to be handled easily. The border being put on, the work is complete.

Where flocked paper is to be hung, the edges or margin on both sides must be cut off and the paper put up with the edges abutting — not lapped,— for the extra thickness would be plainly seen. Great care must be taken not to get any paste upon the surface of this kind of paper.

With these directions the economical housewife may prepare the walls of her home in a satisfactory manner. And we will now consider another kind of wall renovation, which will be found excellent where the walls are rough or cracked badly.

CHAPTER VIII.

House Cleaning, Continued.

Making Damask Walls.

When the side walls of a room are in such a roughened condition that much labor would be necessary to make them smooth, proceed as follows:

First sweep down or otherwise dust off the wall. Then, with a stencil plate, either one purchased ready-cut, or cut by yourself, go over the wall stencilling the design on in geometrical lines thus:

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using for the paint a mixture of white-lead and carriage-rubbing varnish to form a sticky composition. Before the paint dries, throw over it some finely-sifted white sand. The sand will adhere to the paint, and if properly done, the figure will appear quite prominent or thick upon the surface of the wall. Complete the work in this

way, and allow all to dry perfectly hard,—say twenty-four hours. Then lightly dust off the loose sand, and proceed to paint the wall, over all, sand and smooth parts, with "dead" or "flat" paint as described in Chapter V., using any tint desired. A pale green gives a good effect. If one coat does not cover well, apply a second coat when the first is well dried, being sure to prepare the paint

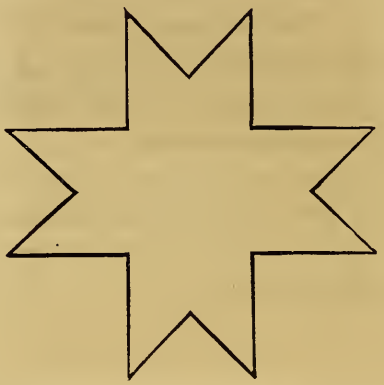

Fig. 23.—Pattern for Wall Decoration.

according to directions given elsewhere, so that it will not dry with a gloss.

This method of renovating an old wall is not only inexpensive, but novel and durable.

If it is not desired to go to the expense of paint for this kind of a wall, kalsomine will answer every purpose, and, in fact, many prefer it, as it holds color better. If

the wall is to be kalsomined, a coat of size must be given after the paint and sand are well dried, and directions for such work will be found in Chapter VII.

Another Method.

Clean the wall nicely, and spread upon it a coat of paint made of yellow ochre, and any cheap furniture varnish—

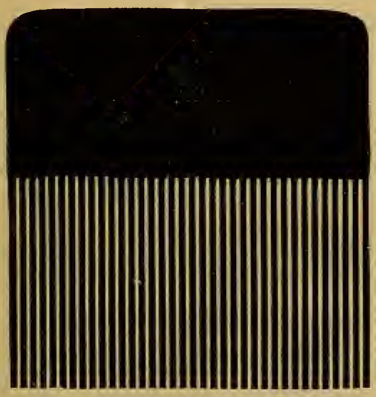

Fig. 24.—A Graining Comb.

no oil, and but little, if any, turpentine. Go over but a small space, say two yards square, laying the paint as heavily as possible. Then prepare several dozen pieces of strong writing paper, cut uniformly to some particular pattern, say like Fig. 23, or any other geometrical figure that can be easily cut with a knife or shears.

Lay the pieces of paper upon the fresh, sticky paint and

press them smoothly. The figures should be put on in a similar manner to the plan previously described, and arranged regularly, as shown in Fig. 25, and the work continued until one side of the wall is done. Now, the paint being still fresh, or not yet dry, take a coarse graining comb (see Fig. 24), and pass it over the paint in a diagonal direction, both ways, as shown, thus giving the

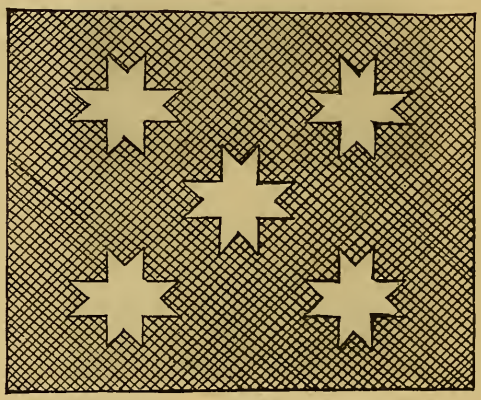

Fig. 25.—Method of arranging Stars or Figures on Wall.

appearance of the warp and woof of damask. When all is dry, either paint over all with flat color, or kalsomine it.

With taste and judgment some very handsome effects may be produced by the damask, and to give the reader all the points regarding this work, I will describe a third plan of operations, viz.:

Still another Method.

The wall having been dusted off, lay out with a pattern and a soft black-lead pencil, figures, vines, flowers, or whatever fancy dictates, as shown in Fig. 26, making the lines strong in color so that they may be seen through the paint which is put over them. Then with some yellow

Fig 26.—Design for Wall Decoration.

ochre mixed with equal parts of boiled oil and varnish, to which is added a little melted beeswax, so that it has no body or covering power, paint over the wall, and proceed as before to comb it diagonally.

When the combing is finished, and before the paint is dry, take a sharpened stick and go over the marks first made upon the wall inside the figure to obliterate on

those parts all signs of combing. Continue thus over every part, and let all dry hard, when it may be painted in flat tints or kalsomined. This latter method gives more labor, but it is the nearest approach to damask hangings of any spoken of.

A very pretty effect may be given a room by making the side walls smooth to within two and a half feet of the floor, then adding a wainscoting of the damask, putting a gilt moulding as the top-rail or dividing line between the wall and wainscoting or dado.

Whitewashing.

One of the worst features of lime whitewash is the rubbing off, and it is therefore giving place to kalsomine; but with a little care in the selection of good lime, and the addition of a quart of salt to five gallons of whitewash no rubbing off need be feared. Another remedy for rubbing off, is molasses: one quart to five gallons of wash is generally sufficient. Lime is preferable to kalsomine where the room needs disinfecting, and for stables and outhouses there is nothing better.

CHAPTER IX.

House-Cleaning, Continued.—Renovating Furniture.

Renovating bedsteads, bureaus, chairs, and other furniture is one of the accessories to cleaning house, and should be well understood by those who aim at perfection and economy.

Supposing the furniture of the parlor to be of hard wood, mahogany, black-walnut, etc., finished in oil, with no lustre, save here and there a small varnished panel, it is not our desire to change the appearance from that it possessed when new. The first step therefore must be to thoroughly cleanse each piece from grease, finger-marks, and dust, by a good washing with soap and water, and drying off well with clean rags. Then having at hand some boiled or raw linseed oil, pour it into a saucer or other flat dish, and dipping a woolen rag into the oil, rub it over every part of the "dead" wood, bearing on quite hard, and rubbing until the hand may be passed over it without soiling it. No perceptible amount of oil must be left on the surface.

The oil will restore the original appearance of the wood, but the small panels—if any—that are glossy must be varnished to restore their lustre. To do this nicely, procure say a pint of ordinary furniture varnish, costing about thirty cents, and spread it plentifully—but not enough to run or flow into festoons—with a small varnish brush or sash tool, which may be purchased for from twenty-five to fifty cents, and which, with care, will last for several seasons. The varnish should be put on without adulteration of any kind, and be brushed or levelled down only so long as it appears limpid, for if worked too much, or until it has begun to thicken or "set," the panel will be streaked. It is a good plan, if convenient, to arrange the piece of furniture so that the parts to be varnished will lie horizontally, to ensure against runs in the varnish.

If the furniture was originally varnished, and still shows a gloss, or is scratched and made to appear white in spots, a different plan of renovating it must be pursued, viz. :

Procure, say, a half pound of pulverized pumice-stone (costing about eight cents), and placing it in a shallow dish, wet it with clean water. Then, with a soft rag dipped into the pumice preparation, give the surface of the varnish a good rubbing, until all gloss, dirt, grease, etc., is removed. Wash off all the powder, and dry the work well with either rags or a chamois-skin—the latter is best. Carved portions, or moldings and beads may be nicely

rubbed with a stiff brush dipped in the wetted pumice-stone. A tooth-brush will answer if no other is at hand.

When the furniture has thus been cleaned, the varnishing is in order, and this may be done in the same manner as directed for panels above. Furniture varnish should dry hard in twenty-four hours. Carriage varnish is unfit for furniture, owing to its oily nature and consequent slow drying or hardening qualities.

Care must be taken in applying the varnish not to get it on too heavy, or it will flow down from the projecting points, carvings, etc., and give the work a very bad appearance. The knack is one quite easily learned, and one must not go at a job of varnishing in a tremulous or nervous manner. When a portion of the work has been once gone over and "laid off" or finished, it should not be touched again with the brush.

Imitation Black Ebony Furniture.

Black ebony furniture is just now quite fashionable, and this is made by soaking the wood, generally maple and ash, in a solution of vinegar, iron-rust, acids, and other coloring substances, when first it comes from the manufacturer, but it is my province to tell how black ebony can be imitated and old furniture be made to look like that emanating from the factory, and to all appearance quite new. The old or antique chairs, tables, etc.,

of our forefathers may thus be modernized at trifling expense if the following directions be followed:

Take a chair for illustration. We will begin by giving every part of it a thorough sand-papering with No. 1½ sand-paper—which is quite fine—(supposing that the chair had been painted or varnished when new); the sand-paper serving to clean as well as to smooth it on every part, for an ebony job must be smooth. Now, after a good "dusting off," it is ready for the coloring.

Procure from the dealer, say, a one-pound can of "Ivory-black ground in japan," and after opening it carefully, take out, say, one-half a teacupful of the color, stir it well with a stick, then add turpentine, stirring all the time, and adding little by little until the paint is smooth, uniformly liquid, and of the consistency of cream. A few drops, say a teaspoonful of furniture varnish, will also improve the binding qualities of the paint, but it is not absolutely necessary. This mixture will dry hard in half an hour, and is superior in every respect to that paint usually sold in country stores, which is mixed and ground in boiled oil. Oil paint finds no place in the work of cleaning house.

The black being ground extremely fine, will cover almost any colored ground thoroughly, and it may be applied with a bristle-brush, but a far better job can be made with a soft hair brush, and if the Camel's-Hair Brush (see Chapter III., Fig. 7) shown on page 16 be

purchased, a less quantity of paint will be used, a smoother job be made, and greater ease be secured in covering the work.

The paint should be spread on plentifully, and be just levelled down with the brush—no more; it must not be rubbed, nor touched again after it has once been left. In one hour, the second coat may be applied, and this coat should consist of a mixture of one-half Ivory-black as it is taken from the original package, and one-half furniture varnish. This is called "color-and-varnish," and it not only helps to color the work, but it gives a slight lustre or

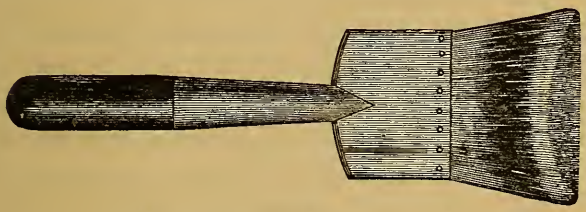

Fig. 27.—Badger-Hair Flowing Brush.

gloss. This coat being stiffer than the previous one owing to the varnish, it can not well be put on with the camel's-hair brush, and therefore to make a good job, the "Badger-Hair Flowing Brush" shown on this page (Fig. 27) should be used. These brushes are soft, yet sufficiently elastic to lay the "color-and-varnish" evenly. If one of these can not be easily procured, use a bristle varnish-brush.

"Color-and-varnish" should be laid on as heavy as possible, and be well brushed around the corners to prevent runs. It should dry hard in twenty-four hours, when, in order to make the work look like ebony, the gloss must be rubbed off, and this is done by rubbing every part with a woolen rag dipped in pulverized pumice-stone and water prepared as previously described. Plenty of water should be used, and the rubbing continued until there is no spot which has a gloss. Care must be taken not to rub through on the sharp corners and edges; but if so, the spots may be retouched with "color-and-varnish," and when dry, rubbed again carefully.

Gold stripes are frequently added to this class of work, and if considered desirable, procure a small bottle of "gold paint" (gold bronze mixed in quick-drying japan), and with a small pencil brush pass it over those parts requiring gold. Vermilion stripes may be substituted for the gold if desired, and a coat of furniture varnish will complete the job. In the following chapter the painting of the mantel, fire-board, etc., will be fully described.

A very handsome effect can be produced by painting ordinary chairs with Vermilion, mixed as described in Chapter V. on Mixing Paints. Light English Vermilion is preferable, but American Vermilion will do very well. The second coat of Vermilion should be prepared with furniture varnish, forming "color-and-varnish," in the

manner just described for Ivory-black. If one has a taste for decoration, the rounds and back can be striped with black, using a striping-pencil and Ivory-black mixed with turpentine and Brown Japan. A coat of ordinary furniture varnish will finish the work.

CHAPTER X.

House Cleaning, Continued.—Painting and Marbling a Mantel-piece.

Black mantels well varnished or glossy are fashionable in most country towns ; and to prepare such, the operator may follow the directions given in reference to painting black ebony furniture, leaving out, of course, the removal of the gloss. Black marble may be imitated thus: After the mantel has been painted black, as above, have at hand some white, green, orange, and red mixed separately with carriage-rubbing varnish, so that neither of them possess much body, or in other words, appear transparent; then with a feather dipped in the white, put in streaks or crooked lines running in all directions and connecting with thin, vapory patches here and there. Next, with a feather dipped in the green, run lines, at times parallel with the white, and again crossing them and mingling the green tints in the patches before alluded to. A very little orange and red may now be added, using a separate feather for each color. Now, having the colors all on, pass over all lightly with a dry dusting brush to soften

the lines and blend them with the black groundwork. When dry, give a coat of hard drying furniture varnish.

For a white mantel, follow the directions given in Chapter V. for white painting and finishing with China gloss, which is zinc-white mixed with white demar varnish to the proper consistency for spreading.

To make a White Marble Mantel.

After the mantel is painted white as above, take a common tallow candle, and holding the lighted end quite near the painted surface, allow the smoke to form figures upon it. Some very delicate tints and shades may thus be made, and these, if supplemented by a few judiciously made fine lines of black and pale green, will give a beautiful effect, and afford a very good imitation of white marble.

For iron fire-boards, hearth irons, etc., the best black is "Locomotive Smoke-stack Japan," to be obtained of most dealers. It will burn and produce a disagreeable odor at first, but it soon wears away, and a beautiful glossy black will remain.

To Renovate Zinc.

The zinc which serves as a protector under the stove may be made to look like new, by washing it with a diluted solution of Muriatic Acid—say five cents' worth of

acid to one pint of clean water. Sapolio and other scouring materials can not be made to give the newness to the metal which the acid imparts, for they simply scratch the surface to brightness, while the acid acts upon every part without scratching or injuring the metal in the least.

CHAPTER XI.

Cleaning House, Continued.—Fixing up the Bronze Work.

There are many little things around the house that are made of metal and coated with bronze to imitate gold, silver, or real bronze, and which becoming tarnished, require re-coating; but how this can be done is to most people a mystery.

The chandelier, gas brackets, lamp-stands, clock and such like fittings, may be made to look like new, at a very trifling expense, if the following directions are strictly followed:

Bronze powder is simply the metal or alloys, ground to a fine dust, by rolling, beating, cutting, and then mixed with honey, to form it into a mass. It is ground on marble slabs in the same manner as paint. After the grinding is done, the honey is washed away, and the powder dried, forming what is known as "bronze."

There are many varieties of bronze as well as many colors, viz.: pale, deep, lemon, copper, fire, silver, orange, etc., but for ordinary work the medium shade of gold bronze is all that will be required. The prices range from

twenty-five cents to one dollar per ounce, and it is always best to buy the highest priced, for it will cover five times as much surface, being extremely fine, and will wear much longer than the cheap qualities.

Bronze is applied both as a powder dusted over a size or mixed with size and put on the same as paint. A mixture of this kind may be purchased under the name of "gold paint," and it will be found quite handy by the housewife in fixing up; but if she be economically inclined she will purchase the bronze powder and mix it with some japan-gold-size-dryer herself, thus saving 100 per cent.

The "size," or material on which to dust the bronze powder, may be ordinary furniture varnish or japan dryer. The article to be bronzed is first cleaned from dust and dirt. Then with a small brush or "sash-tool," costing from ten to twenty-five cents, the varnish is put on very sparingly, and well rubbed over every part. In a few moments it will be "tacky" or slightly sticky—not quite dry—and with a small piece of velvet or plush formed into a sort of pad or dauber dipped into the dry bronze powder, the simple rubbing over or dusting on, will cause the article to assume a beautiful metallic appearance, and when dusted off the work is complete.

It is a good plan on some work, such as chandeliers or gas brackets, to varnish over the bronze with "White French Shellac varnish," to enable one to wash them with

soap and water when they become dirty; but varnish will take off in a certain degree that metallic brilliancy so much admired on bronzed work.

Painting Iron Railings.

Bronzing may be done on iron railings, etc.; and while on the subject of bronze, etc., it will not be amiss to refer more particularly to that class of work. Iron railing should first be painted a deep bronze green. The green is made by mixing chrome yellow with lampblack to the desired color, with carriage-rubbing varnish and turpentine. Then, before the paint is dry, take the velvet dauber, and dipping it into the bronze rub it gently over the most prominent parts, or those which project from the surface, or the tips of the rods or spear heads, etc.

To Bronze Statuettes or Plaster Casts.

To make a statuette or plaster cast look like bronze: First, coat the plaster or dip it in a strong solution of starch, to prevent the size from striking in—or else coat it with size, two or three times. Then size, and bronze it as before directed. After the bronzing is done, take a short camel's-hair pencil, and dipping it into a mixture of Paris green and japan dryer, coat the deepest hollows in the figure, blending the color off to the clear bronze on the outer edge. Then increase the depth of color in the

deepest parts by adding a little black to the green and re-coating those parts.

Silver bronze seldom retains its brilliancy long, turning as it does to a bluish copper color.

Steam pipes or radiators are greatly improved by sizing and gold bronze, and there are many other fixtures about a house that may be made to look far handsomer by its use.

CHAPTER XII.

Cleaning House, Continued.—The Kitchen.

The parlor, sitting-room, and bed-chamber having been "put to rights," we must now look into the kitchen. Let us first consider the contents of the stock-room or pantry. Here we find several vessels of tin, of various shapes and sizes for holding bread, cake, sugar, tea, coffee, spices, etc.; each of them was once nicely japanned and lettered, but they have become dingy, the japan is partly worn off by repeated use, and it is now our desire to make them look like new, and perhaps better.

To do this, procure from the paint-store a one-quart can (the smallest quantity put up by the manufacturer) of *Black Japan*—such as is used by carriage-makers—using a brush, such as described and illustrated in Chapter IX. (the Badger-hair brush). Place the tins upon a table, in a comfortably warm place, and lay on them a nice smooth coat of the japan. It is similar to varnish in its consistency and working, but it must be laid evenly and quickly, flowing on a goodly supply, and never touching any part after it has once been laid off smooth. This

will give at one operation a jet-black, glossy surface, and should dry hard overnight.

If a brown color is desired instead of black, add a very little vermilion (dry) to the japan. If an olive green, add a little chrome yellow.

The plain color having been put on, and dry, the next in order is the ornamentation, and this is easily done with transfers or decalcomania. Transfers may be purchased at most any artists' stores or stationers.

The beautiful scrap-book pictures now so plentiful may also form an active part in the ornamentation of such work. Simply varnish the japanned tin with furniture varnish, and when it is nearly dry—that is, sticky—lay on the neatly-cut-out pictures carefully, and press them into the varnish. These may be used in conjunction with the transfers and some excellent results will follow.

Full directions for putting on the transfers are given in another part of this work, to which the reader is referred.

Besides the tin vessels there is a nest of round, neatly made, and covered boxes, for holding salt, soda, saleratus, etc., and these will look well if painted and ornamented in a similar manner.

Green is a favorite color, and such a color will give variety to the contents of the store-room. To make a bright green, take chrome green (dry) and mix it to a stiff paste with brown japan, then dilute with turpentine until it can be easily spread with the brush.

Brown is another good color for boxes of this kind, to make which, take Indian red and mix it the same as directed for green, and then add dry lampblack until the desired shade is reached. The paint thus mixed will dry in ten minutes, dead or flat, and it must be varnished over to give a gloss. Furniture varnish is good enough for any work of this kind, and it should not cost over $1.50 or $2.00 per gallon. Transfer pictures may now be put on to improve the appearance of the boxes, or stencils such as shown in Fig. 21 may be cut out and made to form a border around the bottom and top edges, using gold bronze instead of paint.

After the boxes have been varnished, and are very nearly dry, the stencil may be laid on, and the bronze carefully rubbed over it with a piece of velvet; the varnish being sticky enough to receive and hold the bronze, some very nice work can be done.

Another simple manner of ornamentation for the boxes is, to cut a piece of wall-paper border, and fit it around the box edge; then before the paint is varnished, stick the border on with paste and let it dry; then varnish over all paint and paper to help hold the paper in place as well as to give a lustre to the whole work.

The sink and stationary wash-tubs are frequently in need of repainting owing to the constant use of soap and hot water thereabouts, and these may be kept in order with a very little exertion. If the color is a light one, such as

oak graining, mix some white-lead with turpentine, then add burnt sienna mixed with furniture varnish, until the color of deep cream ; paint the work with this, and let it dry, which should not be longer than overnight ; when dry, mix a little raw sienna with ale, and with a sponge rub over the paint a very thin coating, giving at the same time the necessary appearance of grain, knots, etc. The color being mixed in ale, it may be washed off, or thinned with water, repeatedly, until the desired grained appearance is obtained. Then as soon as it is dry, a coat of furniture varnish will bind all fast, so that water will not remove it.

If graining is not in order, and a plain color is desired, there is none better than a medium shade of lead color ; to make which, mix white-lead with turpentine to a cream-like consistency, and add one-half a pint of carriage-rubbing varnish to each quart of white paint, then drop in a little lampblack to form the desired color.

CHAPTER XIII.

Painting Outbuildings, Fences, etc.

In painting a new building the first thing to be done is to "kill the knots," that is, to coat each knot over with shellac varnish, to prevent the sap from striking through the paint to disfigure it. The commonest shellac varnish may be used for this purpose; and if the varnish can not be easily procured, it may be made by putting some gum shellac in alcohol. Set it in a warm place and shake it occasionally, until the gum is dissolved.

The paint for a building should be mixed with oil principally. If white, take white-lead from the keg and thin it to a good working consistency with boiled linseed oil, then add one pint of Brown japan (a dryer) to each gallon of mixed paint. The japan not only hastens the drying of the paint, but it prevents the "crawling" or "wrinkling up" of the paint after it has been spread. Some colors, such as Venetian red, Yellow ochre and mineral paint, are apt to separate from the oil and make streaked work, but the addition of Brown japan causes the paint to stay where it is put.

Where an economical job is desired, a paint may be made from the following formula :

Take of Yellow ochre 50 lbs.

Sifted road dust, 100 lbs.

Mix to a stiff paste with cheap paint oil (resin oil), and add soft soap until the mass is in a condition for spreading with a brush. The color will be a dark stone color. If red is preferred use Venetian red instead of ochre. Such paint will answer a good purpose on barns, sheds, etc.

Fences may also be painted with the above paint, and it will be found extremely durable.

Roofing, Etc.

There is a great diversity of opinion regarding roofing —what constitutes the best roof ; how put on, and how kept in repair ; and although it is one of the accessories of painting, I shall only call attention here to one or two facts respecting roofing. The majority of roofs in cities are flat and covered with tin (some with asbestos, and others with felting, sand, gravel, and coal tar substitutes), showing that preference is given to tin for a flat roof ; but the tin roof must be well painted, and be kept painted.

Painting a Tin Roof.

To paint a tin roof, the following plan will be found to give good results : If a new roof, it is best to let it remain for a few days or until a rain-storm or night dew has caused a slight rust of the metal ; or it may be immedi-

ately done if washed over with vinegar and allowed to dry. The paint known as "Grafton paint," "Mineral paint," "Fire-proof paint," and by a dozen other names, is a sort of earth or comminuted slate dug from mines in Indiana and Illinois. It comes in different colors, viz., gray or slate color, salmon, grayish red, dark red, etc. The average price is from 2 to 4 cts. per pound.

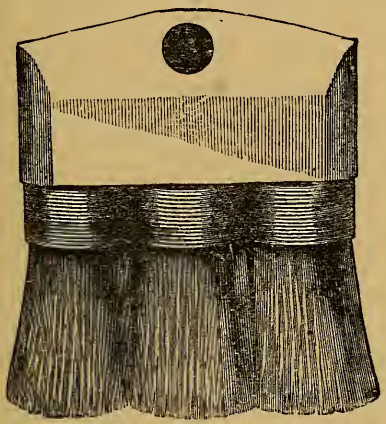

Fig. 28 shows a Roofing Brush.

This dry color is mixed with boiled oil, with a trifling amount of Brown japan to harden it, and applied with a brush made expressly for this work (see Fig. 28). One coat will not be sufficient for a good job; but plenty of time must be given for the first coat to harden before the second is put over it. Two coats will make an excellent job. Care must be taken before any paint is put upon

such a roof that all signs of resin used in soldering be scraped off, otherwise the paint will chip off at those spots.

If it is desired to make the tin roof cooler on account of being near the ceiling of rooms below, it may be painted with yellow ochre instead of the Grafton paint. The ochre being a lighter color, will not absorb the rays of the sun to the same degree. White would be best, perhaps, but white-lead forms a very poor paint for metal roofs, and is also very expensive compared to those recommended.

Tar and gravel roofs may be well enough for some, but the writer has no use for them.

Shingles are best for peak roofs or inclines, and although we frequently see shingles painted *after they are laid*, it is a very bad proceeding, for the paint when dry forms a sort of dam for the water, which soaks just under the butt of the layer above, and holding the water there, the shingle is soon rotted away at that point, and leaking begins.

How Shingles should be Painted.

To make the best shingle roof, have a large pot filled with what is called paint oil (possibly made of fish oil and resin) heated just enough to bear the finger in it; then dip the shingles in the warm oil and lay them out on the lawn or elsewhere to partially dry. When shingles thus prepared are laid upon the roof, water will not penetrate them nor cause them to warp and twist out of place. Slate roofs may be painted if desired, but shingles never.

CHAPTER XIV.

The American Method of Carriage Painting.

There is a plan of painting carriages which dispenses with the numerous coats of paint formerly put on to make a solid foundation, and one of the many fillers for wood is substituted. When properly done, this method gives general satisfaction to both the builder and his customer.

The wood fillers mentioned are liquids similar in appearance to varnish (they are, possibly, gum and oil), and their office is to seal up the pores of the wood against the entrance either of moisture or the liquids from the paint put over them.

Supposing that a new buggy is to be painted and the work is required to be done quickly, cheaply, and well. We begin say on Monday.

Take the woodwork, (that is, body, wheels, bars, beds, etc.,) smooth and clean from the woodworker, and apply a coat of the wood filling with a brush, and immediately proceed to wipe off with a rag. Rub in all that will not readily

come off, leaving the wood apparently stained only. A sufficient quantity has after this operation gone into the pores of the wood to prevent the water used in setting the tires, and the oil, grease, and dirt of the smith-shop from entering, and the gear parts may be sent to the smith to be ironed.

TUESDAY.—The body being kept in the paint-shop, and having been given plenty of sun and air, or been left near the stove, is now ready for "rough-stuff" (a coarse paint designed to fill up all unevenness in the wood). This "rough-stuff" is generally made by mixing Grafton paint, or, as some call it, Mineral paint, with equal parts of carriage-rubbing varnish and brown japan. Then thin with turpentine so as to spread nicely, and add a teaspoonful of raw linseed oil for first coat.

This paint should be laid on as smoothly as possible, and care taken that the "rough-stuff" is not too thick, else brush-marks will be liable to show, even after the job is finished. No matter how well the work may be rubbed and levelled down, any streaks in the "rough-stuff" coatings will surely be seen in the finishing coat. "Rough-stuff" may be put on with common bristle brushes.

WEDNESDAY.—Putty up all imperfections in the body in the morning, and late in the afternoon the second coat of "rough-stuff" (with no oil added) may be applied. The putty used for this job may be made by a mixture of equal parts of rubbing varnish and japan, thickened to

the proper consistency with equal parts of dry lead and whiting.

THURSDAY.—The gears being ironed, the body may now be given to the smith for hanging up. It is always best to have the body ironed before the rough-stuff is rubbed, for, if the smith happens to burn or otherwise injure the paint, it can be easily repaired; and there are few who can iron off a job without a "shop-mark" on some part. The third coat of "rough-stuff" may be given in the smith-shop late in the afternoon.

FRIDAY.—To-day the job is in the smith's hands, and we have time to note down a few *timely* remarks. It is seldom that we see a carriage gear "cleaned up" as it should be for the painter. The smith, so long as he gets the irons on and screwed up, seems to care for nothing more. We see clips drawn into the beds, nuts turned down into the rims, making a hole for the painter to putty up, and many other "actual deeds of carelessness" left for the painter to "smooth over." Can't we do better on this job? The carriage being ironed now returns to the paint-shop, where it is filed and sand-papered until the whole is clean and smooth. The better the condition of the gears at this stage the easier it will be to make a good finish.

SATURDAY.—The gears should now have a second coat of the wood filling (the first coat having done its mission, the coating now put on is virtually the *first* of the painting). This coat may be put on the same as the other—

that is, wiped over with rags until only a thin film covers all. Remember that a good wiping-off will hasten operations, for the material will be ready for the next coat much sooner. A coat of "stain" (lampblack and japan made very thin with turpentine, to enable the rubber to see when he has made a level surface), may be put on late this afternoon, and all left to dry hard over Sunday.

Monday.—The gears are now ready for putty, which should be made as before directed, but a little softer, so that open-grained places may be "glazed over." When this is done, take the body in hand and rub the surface with lumps of pumice-stone, sawed, filed, and shaped to conform to the shape of the panels or mouldings of the body. Keep plenty of water on the work while rubbing, for if the stone is allowed to get dry it will be apt to scratch the surface. The pumice dirt should not be allowed to dry on the body, and a sponge should be in hand all the time to keep it clean. When the black stain is all rubbed off, you may be sure that the surface is level, providing the pumice lumps were of respectable size; if too small they might make hollows in the surface.

Tuesday.—Putty up any imperfections in the gears, and smooth all down nicely with fine sand-paper. The putty being quick-drying, and there being but little used, a good dusting off prepares the gears for color (say black). This we will lay on as smoothly as possible, with a camel's-hair brush (see chapter on brushes).

WEDNESDAY.—The body being rubbed and well *dried out*, is now ready for color. A coat of lampblack will serve well for a foundation or ground coat for any dark color, and this, mixed with japan and turpentine, we apply with a camel's-hair brush. The gears are ready for the first coat of "color-and-varnish" (to make which, see page 98), which may be laid on plentifully with a varnish brush. The "color-and-varnish" should be quite *strong* with color. Any good carriage-rubbing varnish will answer well for the "color-and-varnish."

THURSDAY.—This morning, a coat of ivory-black color (see for mixing, Chapter V.) may be put upon the body, after it has been well rubbed over with some half-worn No. $2\frac{1}{2}$ sand-paper. In the afternoon, dust off lightly, and lay on a medium coat of black "color-and-varnish," using varnish brushes, and laying it as clean as possible.

FRIDAY.—The gears should now be lightly rubbed with pumice-stone and water, and prepared for striping or ornamenting. Eastern builders make all their work quite plain, and would no doubt, in this case, stripe the gears with a single fine line of red or blue, or some simple color, while fashion in the West demands light colors and much ornamentation. The face of the spokes, the ends of the spring-bars and bolt-heads, would probably be gilded, or broad stripes take the place of the Eastern fine lines.

SATURDAY.—To-day, flat down the "color-and-varnish" on the body with pulverized pumice-stone and water. *Do not rub too much.* If, as you should have done, you have got a *clean coat* on, a very light rub will remove the gloss, and prepare the surface for a coat of Black Japan. When the body is flatted, put on a coat of the japan, having, say, ten per cent. of finishing varnish added, to increase its flowing qualities and to make it more durable.

MONDAY.—Give this day for the drying of the japan on the body, and the striping on the gears. The trimmer may take measurements for cushion, fall, carpet, etc., and it is also a good plan to have the shafts trimmed before the finishing coat is put on.

TUESDAY.—This will be a good day for putting on the final coat of varnish, using medium drying body varnish on the body, and gear varnish on the gears. Look to it that the heat and ventilation of the room is all that can be desired, and no trouble will follow.

WEDNESDAY.—Hang up the job; black off bolt-heads and run the carriage into a warm room, or in the shade if in summer, to harden.

A FEW POINTS OF VALUE.

COLOR-AND-VARNISH.—When about to make "color-and-varnish," the painter should be careful not to use *oily* color, for varnish will not readily assimilate with oil, and the consequence would be that the deviltries known as

"silking," "pitting," and "crawling," would appear in the coating before it became dry. "Color-and-varnish" should be made by mixing *quick* color with the varnish, or better still, by mixing the dry pigment with the varnish, and grind it in the paint-mill. Where several pigments are employed to form a color this can not be done so well, and in that case use quick, or japan color—oil color never.

General Rules.—1st. Have the ground or surface to be painted, at the start, perfectly clean, smooth, and well dried. 2d. See that your colors are well ground and properly mixed. 3d. Do not mix much more or any less paint than is necessary for immediate use. 4th. Keep the paint well stirred while the work is going on. 5th. Have your paint of the proper thickness, and lay it on as evenly as possible. 6th. Do not apply a coat of paint until the preceding one is dry. 7th. Do not, if possible, employ a light color over a darker one. 8th. Do not add dryers to colors long before they are used. 9th. Avoid using an excess of dryers. "Enough is as good as a feast," should be the motto in this connection. 10th. Always keep dry pigments in a *dry place*, as dampness will affect the shade of color, and also their drying qualities.

Varnishing.—When varnishing bodies that have small panels, it will be found best to flow on a medium heavy coat to several panels before attempting to lay it off or

"dress it," else a greater amount of time will be necessary to complete the work, and then it will not be done so well. Finishing varnish may be flowed all over a wheel before laying it off, providing the varnish is of the proper kind, and the room of the right temperature.

The principal things to be looked after in varnishing, are the perfect cleanness of everything connected with the work, the room, cups, brushes, and even the clothing of the operator. Pour out the varnish (if for finishing) at least fifteen or twenty minutes before commencing to varnish. The varnish should be applied heavily, levelled by repeated brushings, and carefully examined during the operation to detect any foreign particles that may appear. A picker is used, made of quill or whalebone, sharpened to a point, for removing any small specks of dirt or lint. Having brushed on your varnish, let it stand a few moments, when the bubbles will disappear and show the dirt remaining, which can be removed by the picker. The finishing strokes are then given very lightly, and when possible finish the strokes up and down. Do your varnishing in a bold, confident manner, and use the brush no more than is necessary to produce an even coat.

Improving the Leather on Carriages.

The best preparation in use for dressing or refinishing old leather carriage tops and trimmings is known in the trade as Enamelled Leather Varnish or "Dressing." It

is a thin, black substance like varnish, and may be applied to the leather with an ordinary paint brush. The leather should first be well washed with Castile soap and water, to remove grease and to soften it; then a single application of the "Dressing" will give the leather the appearance it had when new; and in half an hour it may be run out into the street.

Care should be had in varnishing the cushions to prevent the "Dressing" from gathering around the buttons, for being in a mass it would not dry hard in a long time, and would possibly ruin a dress or other clothing.

Painting an Old, Cracked Carriage Body.

The impracticability of effectually concealing the cracks in a painted surface by the application of putty or paint has been fully demonstrated by many of the best carriage-painters in the country, and yet there are those who believe they can do such work successfully. There has been several "crack-fillers" or rough-stuffs put in the market which it was said would fill up the old cracks in a carriage-body so that they would not again appear, but we have yet to see a job done with any of these nostrums that will not show cracks in time.

The best method of repainting, is to remove the old paint by scraping, burning, or eating off with detergent, and then to paint again as if the job was new. Old cracks

will make their appearance very shortly after the job is repainted. They can not be entirely hidden from sight.

Touching Up and Varnishing a Buggy.

The villager or farmer has frequent occasion to "do up" his buggy or family turnout; for country roads, particularly in the spring, are extremely hard on a varnished surface. If he could do such work himself, he would no doubt be greatly pleased, as it would save him many dollars. The directions below, if carefully followed, will produce an astonishing improvement in a dirty and dingy buggy or carriage.

First, give the carriage a thorough washing from mud and dirt, and this must be well done around the bottom of axles, nuts, clips, etc., for the least dirt left there will impair the looks of the varnish. After washing, put pulverized pumice-stone in a flat dish or saucer and wet it well with clean water. Then, with a woolen rag dipped in the mixture, give the body and gears a good rubbing, using plenty of pumice-stone and water, and bearing on lightly, being careful not to rub through the paint to the wood or iron on sharp edges. Do not let the pumice-stone dry on the job. A panel or small part should be done at a time, then washed off clean and dried well with a "shammy" (chamois-skin); another portion may then be taken in hand until the whole carriage looks clean and has a smooth egg-shell appearance. The "touching up"

is now in order. And here is where a knowledge of colors is demanded. If the job be black, it will be easy to get that color at once, ready prepared. If it be some other color that is wanted, the reader is referred to the chapter on colors, and he may find therein a formula for mixing a nearly perfect match for the work in hand. A small part of the work should be varnished over to bring out the color, so that the matching color can be definitely settled upon. Mix the color, whatever it may be, with brown japan and thin with turpentine. With a small camel's-hair brush similar in shape to the one illustrated on page 16, Fig. 7, three-quarters of an inch wide, and costing about twenty-five cents, touch over every spot that is bare or bruised, paint the edges of springs and tires, etc., and in a few minutes the paint will be dry enough to varnish over.

In varnishing the carriage, begin by setting the axles on barrels or boxes, so that the wheels may turn, and commence varnishing the wheels. First lay a plentiful supply of "One Coat Coach" varnish on the spokes with a large oval varnish brush (see chapter on brushes). Lay off or spread the varnish with the same brush well wiped out on the edge of the cup, and clean out between the spokes with a varnish tool, or small brush. Next, do the hub and lay that off, then the inside of the rim between the spokes, and lastly the sides of the rim. Be careful about the ends of the spokes, that there are no runs left;

keep the wheel turning slowly while the other wheels are being done, until the varnish sets. Take off the wheels and set them aside against the wall while the under gear is being varnished. After this is done, take clean brushes, or thoroughly clean the ones in use by rinsing in turpentine, and go on to the body, beginning with the upper parts and working down to the bottom, so that no droppings from the brush will injure what has been done. The "laying off" of the varnish on the body is a very particular piece of work, but as the amateur will not be apt to flow on so heavy a coat as the professional, there is little fear that he will have any runs or heavy flows in the job. Close up all doors and windows and leave the job to dry.

The varnish best suited for such work is what is known as "Hard-drying Carriage varnish," costing $4.00 per gallon, for the gears, and "One Coat Coach" varnish, costing $4.50 per gallon, for the body. Of course there are better varnishes, costing $6.00 per gallon, but the ones recommended will be as good as any one would require when the work is done as described. Ordinarily one and a half pints of varnish will cover both the gears and body of a buggy.

To make an Old Carriage look like New.

The carriage having been cleaned and rubbed down smooth with pumice-stone, touch up the bare places

with a similar color to the ground, but the matching need not be so particularly done. Then take, say a pint of Black Japan—a sort of black varnish much used by carriage-makers—and put on a flowing coating, in the same manner as varnish. This will give you a jet-black and glossy surface ; but as it would not be durable it must be varnished over with good "One Coat Coach" varnish. When the japan is dry, rub the gloss off (only) with pumice-stone and water, as before, then apply a coat of "One Coat Coach" varnish.

If it is desired to make a brown, add a little vermilion or other red to the japan. If olive-green, add a little yellow and a drop or two of red, and use the same as if it were clear japan, the color not affecting it in the least. The beauty in the use of Black Japan is, that it being a sort of varnish and very elastic, the under surface will not cause it to crack, as it would do, perhaps, if dead quick color was put over it.

CHAPTER XV.

Painting a Farm Wagon.

There are many days during the year that outdoor work can not be done, owing to inclement weather, and such days could be profitably spent in painting up the wagons used on the farm. Many, no doubt, would be glad to do this did they know just how to mix the paint and apply it. Almost any one can put on the material if it is properly mixed.

The first thing in order is to run the wagon into some convenient place, the wagon-house, barn or shed, and to set the axles upon barrels or blockings, so that the wheels can be turned, or taken off—which should be done so that the body can be got at easily. Next, a thorough cleaning of all grease from the axles, hubs and fifth wheel, and the sand and dirt from all parts is in order. The best way to prepare the wood and iron is to sand-paper every part well with No. 3 sand-paper. Cut it down smooth; don't go over the work as if it was of no consequence, for if paint be put over dirt you may rest assured that it will not stay very long.

If the wagon is a platform spring, you may take the nut off the king-bolt and remove the front gear, setting the top fifth wheel on a barrel. If it be a bolster wagon, the body may be taken off and set up separate. The sand-papering done, a thorough dusting should be given, when the painting of the work may be begun.

The colors for a farm wagon may be chosen from the following list, viz. :

Style No. 1. Body, chrome green, or Milori green. Gears, cream color. Mix the green with Brown japan to a stiff mush, then add raw linseed oil until it is of a consistency to spread nicely with the brush ; but do not put too much oil in the paint. A little turpentine may be added if the paint is too stiff or gummy. The gears may have more oil, for they receive the hardest usage. Mix white-lead with oil thin enough to use, then add chrome yellow mixed in japan until the desired shade of cream is reached. A few drops of red will improve the color. Now add one gill of Brown japan to a quart of paint, and thin if necessary with turpentine.

Style No. 2. Body, Indian red, mixed the same as directed for the green of No. 1. Gears, vermilion, mixed as follows:

Take American vermilion and mix it with Brown japan and raw oil equal parts to the proper consistency for spreading. Now add whiting to the mixture until it is of a thick, mush-like consistency; then thin with turpentine.

The whiting prevents the vermilion, which is quite heavy, from settling to the bottom of the cup, and it also makes the paint spread easier. The paint should be put on as quickly as possible, for it is apt to roll up into streaks if this is not done.

Style No. 3. Body, deep English vermilion. Mix for a first or ground coat white-lead and American vermilion to form a pink, with raw oil and japan equal parts, and thin with turpentine. When the ground coat is dry, give it a light sand-papering, and apply a coat of the vermilion color, mixed with carriage-rubbing varnish to a thick mush, and thinned with turpentine. Vermilion should be put on with a badger-hair brush (see chapter on brushes) where economy is studied, for such a brush will enable the workman to lay a solid coating very thin, while a bristle brush will not do so.

The Gears, of a red body, may be cream color, brown or red (American vermilion).

Olive green is a cheap and a very good color, for either body or gears. It is made of lampblack, chrome yellow, and red.

Sienna and white also forms a nice salmon color and one that will wear well. But the best color of all, we think, is brown. Take Indian red and add lampblack to form the color, and mix it as described for green in No. 1.

The colors chosen, lay them on as evenly as possible, being careful to wipe the brush around every bolt-head

and nut, and it is well to paint the under part of the gears. Though not seen, painting will prevent decay, and the trouble will be well repaid in wear.

If striping is to be done, now is the time for it, if the paint be well dried; after which, lay on a heavy coat of wagon varnish, not black, sticky furniture varnish, but a good article, costing perhaps $3.00 per gallon. A quart of varnish ought to be sufficient for the job.

If the wagon be a new one, and never before painted, the wood and iron must first be primed. Take white-lead and color it with lampblack to a clean lead color (if the color is to be a dark one), or leave the lead uncolored if a light color is to be used over it. Mix it with raw linseed oil, and add one gill of Brown japan to each quart of paint, then spread it as smoothly as possible. If too thick add turpentine, but not too much.

Ornamental work on both body and gears may be nicely done either by the use of decalcomania or transfers, which may be purchased from dealers in painters' supplies, or direct from the manufacturers. A beautiful scroll and landscape for the sides of an omnibus or wagon (consisting of an oval centre and six parts of scroll, which can be put either in a straight line, or combined to fit any curve ; 14 inches wide and 92 inches in length), will cost but $7.50. Scrolls 18 or 20 inches long, in gold and colors, are now no rarity, and when well applied to a job give elegance at a trifling expense. Large

transfers are more particularly referred to, and their use is advised where such designs can not easily be drawn, because they are not so likely to be known as transfers, owing to their size and beautiful workmanship. They are, indeed, very different from the ornaments such as every little school-boy had at one time stuck on everything both at home and at school.

A transfer ornament may be so changed in appearance that it would never be known as such, by a few touches

Fig. 29.—Showing how Stencils are Made.

of the pencil, the slight addition occupying but little time. Stencilling is another method by which a wagon may be ornamented, and when the workman is not capable of making a fair job of striping, he may complete the job by stencilling.

The accompanying engravings (Fig. 29) will give the student a fair idea of how stencils are made, *i. e.*, more particularly the bars which hold the pattern together. To

make a stencil for this work proceed as follows : Procure some thin hard calendered pasteboard—that known as "printers' press-packing" being best—of a leather color, and very strong in fibre, and draw upon it any desired pattern. Lay the pasteboard upon a piece of glass, and cut out the figures, leaving bars to hold the parts together. When cut, coat the pattern over with shellac varnish to prevent the paper from absorbing the oils of the paint.

For small patterns, a good quality of writing paper will answer the purpose well enough.

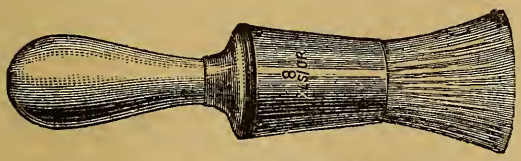

Fig. 30.—A Stencil Brush.

These patterns when cut should be kept in a covered box to preserve them, for they may be used many times.

The brush for stencilling is a short stiff bristle or hair brush, and in order that no mistake may be made in its selection, it is shown in Fig. 30 of the illustrations.

If one of these can not be easily procured, a sash tool (Fig. 3, page 14) may be cut square across in the middle, making a very good substitute for the real article. A piece of pasteboard or soft pine should be used to rub the color out on, so that the brush may not be too heavily

charged before putting it on to the stencil. Borders corners, or centre-pieces may thus be put on in oil colors very quickly and well after a little practice, and then be varnished over the same as any other ornamental painting.

CHAPTER XVI.

Gilding, Bronzing, Silvering, and Lacquering.

Although the laying of gold leaf and bronze has already been mentioned, the subject is of sufficient importance to give a more complete description of the four branches of trade named above, which seem to belong to one family. It does not seem necessary to explain the process of manufacturing gold leaf or bronze, any further than to give readers an idea of what they are about to use, and we will only say that gold leaf is the purest of the foliated metals, which, owing to its ductility, may be beaten so thin that one ounce will make 1,600 leaves, covering a surface, if laid together, of 105 square feet. Gold leaf is alloyed with copper and silver—not so much to cheapen it as to change its color—copper deepening it or giving it a reddish hue, and silver lightening it or giving a pale yellowish hue. Consequently we have three grades, viz.: light or lemon gold, medium and deep; the latter being considered by most painters the best for wagon or carriage work.

Silver leaf is fast becoming obsolete, owing to the dis-

covery of aluminum leaf and nickel leaf, which do not tarnish like silver. Nickel leaf is beaten out very nearly as thin as gold leaf, and is now coming into general use.

Dutch metal is a very inferior sort of foliated alloy, and only fit for theatrical scenery and other like uses.

Bronze is a finely comminuted metal or metallic dust, made of gold, silver, and alloys, by grinding the metals on porphyry stones, while mixed with honey to form a sort of paste. When the grinding is completed, the mass is washed in several waters until the honey is removed, then the powder is dried on shallow pans. There are many colored bronzes, viz.: gold, rich gold, lemon, orange, copper, carmine, fire, dark and light gold, crimson, violet, brown, lilac, silver, white, light and dark green, with which an ingenious workman may make very handsome ornamental work; but, as a general thing, the colored bronzes tarnish far too quickly.

The ground of either paint or varnish must first be prepared to receive the leaf or bronze, otherwise it would adhere to every part of the work, and this is done in several ways.

First, and probably the best, is to cover the ground with fine dust from a "pounce-bag," which is made by tying up in a piece of coarse muslin or woolen rag some dry pigment, whiting being generally the best.

Second, by washing the surface over with the white of eggs, and allowing it to dry before laying on the size.

Third, by cutting a potato in halves, and rubbing the freshly-cut surface over the work, which, when dry, gives a thin film of potato starch.

Fourth, by rubbing the work over with whiting mixed with water, and allowing it to dry. Either of these preventives of sticking may be resorted to with good results on painted work. When the ground is prepared, the preparation of the size is in order, and the following formulas will be found excellent:

For quick-size to dry *tacky*—that is, very sticky or adhesive—mix equal parts of carriage-rubbing varnish and brown japan together.

For size to dry tacky in five hours, mix two parts best carriage-finishing varnish with one part japan.

For size to dry in twelve hours or overnight, mix equal parts light permanent wood-filling with brown japan.

For extra jobs, purchase Harland's English gold size. For still better, that is, more durable work, take boiled linseed oil, and putting it in a shallow dish, set it on fire, and allow it to burn a few minutes, then cover the dish to extinguish the flames; add to this thickened or fat oil, sufficient brown japan to cause it to dry in the time desired, which may be determined by a little practice.

Gilding is well known to take its brilliancy, or imitation burnish, from the surface and sizing over which it is laid.

Gilding on plate-glass has more brilliancy than the same quality of gilding upon common sheet-glass; and gilding

upon a finely-prepared surface, and over the most brilliant and glossy size is equally superior to that done over a poor surface and poor sizing. To produce good work, therefore, the surface must be smooth, and the sizing one that will flow smoothly and without fat edges. The formulas given above are as applicable for silver or nickel leaf, and for the various bronzes, as for gold leaf; but it should be borne in mind that sizing on which bronze is to be put must be much drier or "tackier" than that for leaf, otherwise the fine powder is apt to penetrate the size, or settle and become darkened or devoid of brilliancy.

Gilding Carved Work.

For gilding carved work or on glass, it is necessary to use a "cushion" or partly-covered palette on which to spread a leaf of gold for cutting the same to the desired size or shape; a smooth-edged or dull "gold-knife" for cutting with, and a "tip" with which the pieces are lifted from the cushion and deposited upon the work.

The "tip" (shown in Fig. 31) consists of two thicknesses of cardboard, between which the ends of a thin layer of camel's-hair is glued. It is a very useful implement in gilding on glass, as it is impossible to gild glass if the hand or book touches it. For striping and other fancy work on plain surfaces, gilding may be done directly from the book. Hold the book of gold leaf in the left hand, and with the forefinger of the right hand,

lift the first paper leaf, leaving the gold on the opposite side; then, holding the book close to the work, with its front edge pointing downward or toward the bottom of the letter or ornament, lightly touch the size, and roll the book upward, pressing lightly upon the back of the book

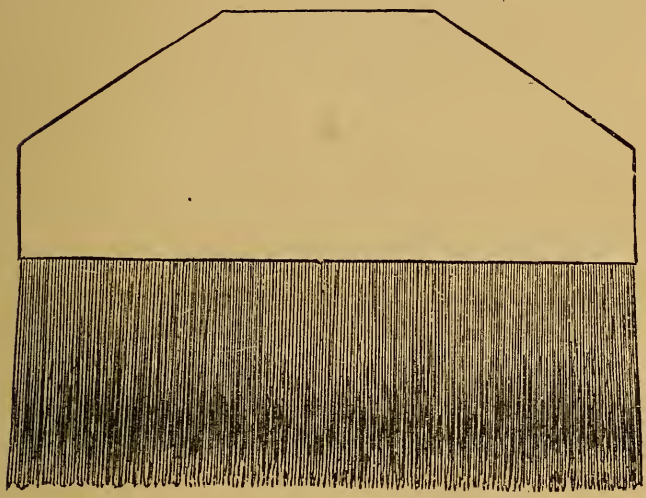

Fig. 31 represents a Gilder's Tip for Lifting Gold Leaf.

with the side of the forefinger, until the top edge of the sizing is reached, or the whole leaf laid on; repeat this till the whole of the sizing is covered, then wipe it over gently with a bunch of cotton.

Another plan is to first cut off the back of the book so that each leaf is separate, then, lifting the first paper leaf,

lay it upon a smooth surface and draw a camel's-hair brush filled with turpentine over it; return it to its place and the gold will be found to adhere closely to it; lay this leaf aside and proceed with the other leaves in the same manner; then, holding the book as before described, lay the leaf on to the sizing. The turpentine will cause the leaf to adhere to the paper so that any part of the work not covered with sizing will not remove it, and thereby less waste will occur. This is a good plan where the work is to be done in a windy situation. Another plan is to cut the back of the book as before, and to rub very lightly a piece of paraffine candle or a piece of white beeswax over the paper; after the gold has thus been fastened to the paper the book may be cut to any desired size, and as the gold will adhere to the waxed paper until it touches the size, thus a very trifling waste will be made.

The refuse gold and the cotton with which it is cleaned off should be carefully saved, as it is valuable and can be sold to any gold-beater. The foregoing rules apply to all leaf, but the Dutch metal and nickel are not worth the trouble of saving.

Bronze, being a fine powder, must be treated differently. The sizing being in readiness to receive it, take a piece of plush, velvet, or chamois-skin, and folding it into a small wad or ball, dip it into the bronze powder and gently rub it on to the sizing; afterward clean off the surplus metal with a bunch of cotton. For carved work a soft camel's-

hair brush may be used to apply the bronze. Silver and nickel leaf is frequently made to look like gold by simply flowing over it a lacquer. Most of the gilt frames we see are done by this process. A formula for the lacquer I give below:

Gamboge . . .	3 parts.	Sandarac	4 parts.
Mastic	4 "	Shellac	20 "
Dragon's blood	1.5 "	Spirit of wine.	100 "
Saffron	1 "		

However, it may be far less trouble to procure the lacquer already made from the picture-frame manufacturer, and this is advised, to make certain of good results.

CHAPTER XVII.

Imitation Ground Glass.

To make imitation ground glass that steam will not destroy, put a piece of common window putty in muslin, twist the fabric tight, and tie it into the shape of a pad; clean the glass first, and then pat it over with the pad. The putty will exude sufficiently through the muslin to render the stain opaque. Let it dry hard, and then varnish with white damar varnish. If a pattern is required, cut out the figure in paper and stick it to the glass lightly with gum, then press the pad or dauber over it; when all is dry, remove the paper figures and varnish to make the figures slightly opaque.

Another plan is to stipple—that is, strike the ends of the brush against the glass, with a very thin white-lead paint mixed with varnish principally.

Blackboard Paint.

One quart of shellac dissolved in alcohol; three ounces pulverized *pumice*-stone; two ounces pulverized *rotten*-stone, four ounces lampblack; mix the last three ingredients together, moisten a portion at a time with a little of

the shellac and alcohol, grind as thoroughly as possible with a knife or spatula; after which pour in the remainder of the alcohol, stirring often to prevent settling. One quart will furnish two coats for eighty square feet of blackboard not previously painted. The preparation dries quickly, and the board may be used within an hour if necessary. No oil should be used.

Staining Oak-graining.

If it be desired to change a piece of oak-grained work, as in house painting, to a black-walnut color, take the Enamelled Leather Dressing—before spoken of for leather—and apply an even though thin coating over the oak-grain, which will stain it a beautiful black-walnut color, and require no further attention, for the "Dressing" or varnish acts as a stain and gives a good gloss at the same time.

Mahogany Stain.

To stain black-walnut, or any dark-colored woods, a mahogany color, mix half an ounce of dragon's blood with two ounces of good alcohol, and shake occasionally. When dissolved, put as much of this stain into alcohol as will make the wood the color desired, and go over with a brush.

For light-colored woods, such as pine, beach, etc., add a little burnt umber to the above stain.

Rosewood Stain.

To stain in imitation of rosewood, apply to any light-colored wood a coat of asphaltum thinned with turpentine, and when dry, stain with dragon's blood. There will be no grain—merely the color. If a grain is desired, mix lampblack with stale beer and with a sponge make

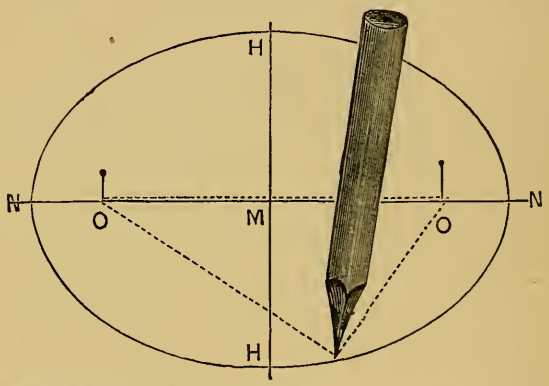

Fig. 32 shows Method of Laying Out an Oval or Ellipse.

the black streaks or grain. Then finish with furniture varnish.

Laying Out an Oval or Ellipse.

It is frequently the case that the painter is called upon to lay out an oval, or, more properly, an "ellipse"; and not knowing the simple rule by which his lines may be drawn, he goes to work with compasses, etc., and if he strikes anything approaching his ideas of an oval, after a

dozen or more lines are drawn, he is content, but in most cases his lines are sadly "out of true," and he becomes the laughing-stock of those who have an eye for correct forms. To enable any one to lay out a perfect oval, any desired size, the following directions should be observed: Supposing that it is desired to make an oval ten inches long and six inches wide. First draw a horizontal line, as shown at N, N, in the drawing, and cross it with a perpendicular line H, H. Now, with a rule measure from the centre or intersection of the lines at M, five inches each way, on line N, and mark the distance; next, measure three inches each way from the centre on line H, and mark that, which gives the exact space that the oval must fill. Next, take the distance between the centre M, and the mark on line N, which is five inches, and placing one leg of the dividers on the mark on line H, turn the other leg until it strikes line N, on either side, making the points O, O, in diagram. Now, stick a pin in the two spots thus made, O, O, and another pin in spot H, and tie a string around the pins quite tight. Next remove the pin from H, and in its stead place the point of a lead-pencil, and keeping the string taut move the pencil along. You will find that the string directs the course of the pencil point, and the result will be a perfectly-drawn ellipse. If the oval is to be long and narrow, or otherwise, it makes no difference, it will be a perfect oval, and the measurements on lines H and N will give the proper boundary. As a time-saver,

as well as for correctness, this method can not be excelled by any geometrical drawings with instruments.

To Lay Out a Star.

The star pattern is another useful and oft-called-for design, and, although it may seem strange to some that there are hundreds of mechanics who do not know how to lay out a star, it is nevertheless a fact. Proceed at follows: First, draw a circle with the compasses to the size you wish the star to be, and, if a five-pointed star, set off on the circle line five points at equal distances, then simply draw a line from point to point across the plane. For a six-pointed star, the compasses, when set to form the circle, will be exactly right to mark the six points, and lines drawn as before mentioned will give the desired result. A star may be drawn having any number of points, but it is seldom that more than five are used.

To make a Drawing Uniform.

It is sometimes necessary to make a drawing uniform on each side of the centre, as, for example, the drawing of a vase, an ornamented column, a scroll, etc., and where this can not be done by a free-hand, the following plan may be resorted to: Take a sheet of paper, and fold it at its centre, then with a soft lead-pencil draw one-half the design, allowing the fold of the paper to form the centre. When this is done, reverse the fold; that is, fold the pa-

per with the pencil-marks inside, and laying it on some hard surface, rub the back of the drawing with an ivory paper-cutter, or other smooth instrument until the lines are plainly seen on the clean paper. Open out the paper, and the whole design will be found faintly outlined, and by simply following the lines it may be completed.

Another plan of copying is to take some soft thin paper and rub it over with lampblack and tallow until it is well saturated, then wipe off all that will readily come off with a soft rag. By laying this under a drawing, upon clean paper, and following the lines with a hard ivory or bone point, the black will be forced from the copying-paper, and a good copy result.

Copying with Sensitized Paper.

Sensitized paper has of late been put in market, by which accurate copies of a drawing may be made by simply laying the drawing upon the prepared paper and exposing it to sunlight as in the case of a photographic negative. The instructions given by the manufacturers of this sensitized paper may not be amiss just here :

1. Provide a flat board as large as the tracing to be copied.

2. Lay on this board two or three thicknesses of common blanket, or its equivalent, to give a slightly yielding backing for the paper.

3. Lay on the blanket the prepared paper with the sensitive side uppermost.

4. Lay on this paper the tracing, smoothing it out as perfectly as possible.

5. Lay on the tracing a plate of clear glass, which should be heavy enough to press the tracing close down to the paper.

6. Expose the whole to a clear sunlight by pushing it out on a shelf from a window from four to six minutes; if no sunlight can be had the exposure must be longer.

7. Remove the prepared paper and wash it for one or two minutes in clear water and hang it up to dry. This produces a white-lined drawing on a blue ground, and it will be found excellent for some work. The paper comes in tubes, secured from the light, and it must be kept in the dark as much as possible before use.

To make Tracing Paper.

Tracing paper may be made by saturating some thin paper with oil, or grease, or with turpentine; the latter being excellent where the copy is to be on clean paper, for the turpentine will evaporate and leave the paper quite clean.

CHAPTER XVIII.

Making Putty.

Putty for Windows.

Mix whiting with boiled linseed oil to a stiff dough, and work it or knead it as a baker does his bread until it is of the proper consistency and is free from lumps.

Putty for Plate-glass in Windows, Wagons, or Hearses.

Take a piece of plush or velvet and draw out the warp, leaving a fine flocking (short threads); mix this flocking with equal parts of whiting and dry white-lead in brown japan and carriage-rubbing varnish equal parts, and knead all into a stiff dough. The short threads serve the same purpose as hair mixed in plaster by the mason, binding the particles together and effectually preventing chipping or breaking out of small pieces. The large glasses in hearses should be allowed to rest on a rubber strip, and then be puttied in place with putty made as above in connection with a small strip of wood screwed solidly to the frame.

Putty for Farm-Wagons and Machines.

Mix whiting to a stiff dough with brown japan; then add one-third in bulk of white-lead ground in oil; knead and work the mass smooth, adding whiting if necessary to thicken it.

Putty for Fine Carriage Work.

Mix equal parts of dry white-lead and whiting in equal parts of carriage-rubbing varnish and brown japan. Pound the mass into a stiff dough with a wooden mallet, using whiting to thicken if necessary.

Keep all putty in water when not in use, to prevent it from drying hard.

To Soften Old Putty.

Wash it over with a strong solution of potash or sal-soda and lime.

CHAPTER XIX.

Touching up Household Articles.

There are a hundred and one little things about a house that may be improved in appearance by a slight rub over with varnish. The furniture, in most cases, is oiled and polished. The stair-cloth and hall or kitchen oil-cloth flooring may be varnished over at night and be dry for use the following day, but the knowledge of just how such work is to be done prevents many from attempting it. Directions for varnishing many household articles have already been given, but there is yet opportunity for going into more minute details.

Varnishing Floor Oil-cloth.

The varnish best suited for a floor-cloth is known in the trade as "No. 1 Furniture." It dries hard and quickly, and is not so readily removed by the repeated washings of soap and water. This varnish should cost about $2.00 per gallon, and it may be kept bottled so that at intervals the cloth may receive a coating and thus be kept bright and clean. It is hardly necessary to explain that before

varnishing, the oil-cloth must be washed clean. It is better to use no soap in washing or at least but a little, because strong soap will remove the coloring.

Stencilling.

The figures in a floor-cloth may be brightened up by the stencil process if need be, and to do this take a piece of thin paper and copy the figure originally on the cloth, then lay the pattern thus obtained upon some thick paper and cut it out (see page 59 for directions about making stencils). After the new paint has been put on, and this will probably not be necessary upon every square, the varnishing will complete operations.

Stair-cloths may have the centre stripe, where most worn, painted with a plain color, say dark brown, leaving the original edge-stripe, and a very nice job be made of it. See chapter on Mixing Colors for method of preparing paint for this purpose.

Painting Stairs.

The stairs may be painted either in full, or on each side, say eight inches from the edge, with yellow ochre or brown, but we would not advise varnishing any paint upon floors. A little carriage-rubbing varnish may be added to the paint to give it a slight gloss, and the reader will find full directions elsewhere in these pages for floor painting.

Baluster Rails.

A banister or baluster rail should not be varnished. It should be rubbed well for several nights with boiled linseed oil, leaving on the wood a good supply of the oil; then in the morning rub off all that has not soaked in. A week's work will produce something in the way of a polish that can be produced in no other way. The newel post and banisters may be varnished with No. 1 Furniture varnish, or oiled, as desired.

Varnishing the Front Door.

The front door of a dwelling, if of hard wood or grained, is one of the most difficult things to be kept in repair, that is, if the occupant is anxious to have it look well at all times. Furniture varnish will not answer the purpose for a front door, for being exposed to the elements, far more even than a carriage, it requires the best varnish. The hot sun of summer is liable to cause blistering, while the cold of winter, with sleet and rain, causes the surface to crack. A good plan is to fill the grain of the wood, if it be hard wood, with the best carriage-rubbing varnish, then apply Wearing body varnish (the best carriage-finishing) costing at least $6.00 per gallon. Great care should also be taken not to dilute the varnish with oil or turpentine, as these would impair its durability.

"Hard oil finish" has been recommended for outside doors, but, being simply a resin varnish, it can not be said

to be durable. This "hard oil finish" may answer well in place of the No. 1 Furniture varnish before spoken of for unexposed work, but the writer will not warrant it for front doors.

To varnish a front door properly: The old varnish should first be rubbed with pulverized pumice-stone and water until every part is clean and smooth. A thorough washing is next in order to remove any of the pumice powder that may remain in the creases of mouldings or in corners, and where a chamois-skin is at hand, it should be used. Otherwise, clean rags will be found excellent in drying the surface. When this has been done, and a thorough dusting off been given, the operator should pour into a clean cup or other vessel, some of the varnish (best carriage-finishing) to be applied, and with a flat or an oval varnish-brush, begin the spreading of the varnish at the upper part of the door, laying the material on as heavily as possible, for a thin coating will not be of value.

Varnish should be put on plentifully, so that it may *flow*, but yet not so heavy as to run in festoons or heavy patches. Varnishing is unlike painting, for in one case the material is rubbed well with the brush, while in the other the varnish is laid as level as possible and plentifully, then carefully passed over with the brush, though not sufficient to disturb it after it begins to "set."

A good idea of the requirements in laying varnish might be gained, if one had an opportunity to see a car-

riage varnisher at work—for none know so well how to handle it. The work of laying the under or rubbing coats requires just as much care as is bestowed on the finishing coat, for the cleaner and smoother they are put on, the more satisfactory will be the finish. A large brush, say 0000 (four naughts) and a tool, *i. e.*, a small brush for "cleaning up" or brushing around mouldings and the edges of panels should be used, for no good varnishing can be done with a miserable, small, flat, half-gummed-up tool. Everything must be *clean*, and to insure cleanliness, it is an excellent plan to first get the door, and casing too, if that is to be done, well cleaned, and then to tack a large sheet of muslin over the whole front to exclude dust and sun while the varnish is drying. Then opening the door from inside, lay the varnish, and close the door.

Doors may be painted in a similar manner, but as a rule it is not so necessary to exclude dust while painting.

Varnishing the Vestibule.

The vestibule should be as well done as the outer face of the main door, for in many cases the outer door is to be left open, and poor varnish would simply be vexatious. The side walls of the vestibule should also be painted or papered, for the dampness of so exposed a place would soon ruin kalsomine or fresco.

Imitating Ground Glass.

The lights around a front or hall door, if any, not of ground or colored glass, may be made to look well by simply daubing the glass over with a small dauber made by tying some soft glazier's putty up in a piece of coarse cloth. The putty will ooze through the meshes of the muslin and give a very good imitation of ground glass. A stripe may be added by scratching through the glass with a sharpened stick, passed along a straight-edge.

Transferring Prints.

Many beautiful pictures may be inexpensively made by the transfer process, not that known as decalcomanie, but the fixing of an ordinary print, steel-plate, lithograph, etc., by varnish to glass or a painted surface.

The method is as follows: To fasten the picture to a prepared ground, say a white painted surface, first wet the paper well with clean water—or, if a colored print, with salt and water—and lay it carefully between some newspapers or the leaves of a book to allow all the outer moisture or wet to be absorbed. Next, prepare the painted surface to receive the paint by varnishing it with carriage-rubbing varnish, laying on a good coat, for a thin, sparse coat would not be suitable. When the varnish has become nearly dry (that is, when the hand may be passed lightly over it without its sticking to it, but when if the

finger be pressed directly upon it, it will appear quite "tacky,") take the print and place it carefully, *face down*, upon the varnish, and press every part down smooth, or place several layers of newspapers upon it, together with a weight to keep them in place, and let all remain until the varnish is dry. Next dampen the paper with clean water, and begin to rub it off, using the ball of the middle finger as a rubber, dampening and rubbing until all the paper is removed and nothing but the varnish and ink of the print remain. The picture is then varnished over with the same kind of varnish previously used, and all is complete.

To Transfer Engravings on Glass.

To transfer a print to glass, the glass must first be well cleaned and varnished with a clean thin coat of carriage-rubbing varnish, and be allowed to dry hard. A picture will not transfer well to glass without two coats of varnish are put on. The second coat—the same as the first—being put on and allowed to get "tacky," as before spoken of for a painted surface, the print is dampened and laid on as before described, and when the paper is rubbed from the back, the picture will be transparent, and by coloring on the back, coarsely, a beautiful effect will be given to the whole picture. Wood engravings, lithographs, or any similar picture can be transferred by this process.

Something of this kind was introduced some years ago under the name of "Grecian Painting," in which the paper was rendered transparent by coatings of Balsam of Fir varnish, but no such effect could be given as in the process described above.

Varnishing Rustic Work.

There is frequently occasion to renovate a rustic chair, hanging basket, or some other piece of rustic work, for as a rule the varnish used by the manufacturer soon disappears if the articles be exposed to the weather.

Procure for this work some carriage-rubbing varnish, for filling up or making a foundation for a better quality of varnish. One coat will generally be sufficient for this. After it is dry, flow on a heavy coat of "One Coat Coach" varnish, which will dry hard and wear well even if exposed to the elements or frequent wetting. Carriage-rubbing varnish costs about $3.50 per gallon, and a pint will cover a far greater area of surface than many imagine, so the actual expense of varnishing such things is trifling. Cheap furniture varnish ($1.50 per gallon) may do for *inside* work, but it will turn white and decay when exposed.

Fret-work,

such as brackets and fancy ornaments, may be oiled with boiled linseed oil, or be varnished, the latter we think best, and good shellac varnish is excellent for such work.

For white hollywood, white damar varnish may be used, but for other woods shellac will be found good enough. It must be remembered that in varnishing sawed or fret work, great care is necessary not to have the varnish gather in the corners and run down upon the face of the work. A small bristle brush, such as described for drawing stripes in fresco painting, will be found excellent, for with it the small places can be well wiped out.

Varnishing Clock Cases.

In many instances a clock case may be made to look like new by simply rubbing it with raw linseed oil and a woolen rag to reproduce its color and lustre ; but if too much worn to look well, it may be varnished either with furniture varnish or shellac varnish, the former being preferable. Simply wash the case with soap and water, and when dry flow on the varnish.

The face of the clock should not be tampered with, save to carefully clean it ; the hands may be coated with black japan, or be bronzed over with gold (see Chapter XVI., on Bronzing).

Plaques and Chromos.

To preserve the beautiful pictures now so plentiful from age and fly-dirt, take them when new and clean, and flow over them a coat of white French shellac varnish, or to improve a faded chromo-lithograph, wash it carefully with clean warm water (no soap), and then varnish as above.

Oil-paintings are also sometimes improved by a very thin coat of the French shellac varnish, but when the varnish has dried, the lustre should be dimmed by rubbing with anything that will remove the gloss and not scratch.

Gilt Moulding, or Frames.

The majority of what is called gold-frame or gilt-moulding, is made by covering a prepared pine-moulding with silver leaf, which is then lacquered with gold-colored lacquer. This is not water-proof, and consequently frames and mouldings should not be rubbed hard with a wet cloth, although a little washing will do no harm. To renovate a gilt frame it is best to do it all over rather than to touch it up in spots, for the ground can seldom be matched. However, gilt-work is now so cheap that it will hardly pay to attempt to fix it up. A coat of French shellac varnish will brighten up an old frame, but we think it best to either paint, bronze, regild them or discard them entirely.

Sanding in Imitation of Stone.

There are many parts of a store or dwelling which may be improved by giving them the appearance of stone. The cornice, window-sills and caps, iron or wood railing, and in some cases the whole front of the building may thus be coated. To do this, mix paint as near the color of the stone desired as you can with boiled linseed oil. Two coats of paint will generally be necessary, allowing

the first coat to dry well before putting on the second one. When the last coat is spread and while yet wet, fine white sand should be sprinkled over it plentifully.

To Imitate Granite.

Mix white-lead and oil, and after the sand has been sprinkled on, take a little lampblack and oil, and dipping a brush into it, strike the brush against a stick held in the other hand, to throw a trifling amount of fine black specks upon the sanded surface. Care must be taken not to put on too large spatters, nor too much. A good plan is to experiment on a board until the knack of spattering is gained.

To Imitate Portland-stone.

Mix white-lead, yellow ochre and a drop or two of black to make the color, with oil, then sand it with no spattering of black.

To Imitate Brown-stone.

Use Grafton paint, or yellow ochre and Venetian red mixed with oil.

At almost any dealer's one may purchase a "sanding-cup," consisting of a conical-shaped tin vessel having a hinged lid in which there are a number of small holes—like a pepper-box, with which a uniform coating of sand may be put on.

The sea-sand should be well dried before any attempt is made to sift it, or it will not work well. In sanding a

flat smooth wall or boarding, a better imitation of stone may be given by laying it off in blocks, as shown in Fig. 32, by simply scratching through the sanded paint before it dries, with a stick, say, one-half an inch in width on the point, using a straight-edge, to govern the markings.

For fine work of this kind on the interior of a dwelling, procure some "flockings"—a fine lint made in cutting plush and velvet—quite inexpensive—and after spreading

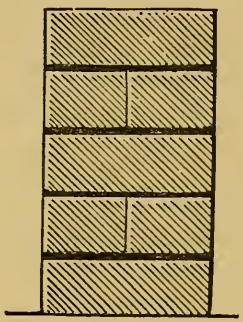

Fig. 32, showing Method of Laying Off Sanded Work to Imitate Blocks of Stone.

a coat of any cheap varnish, dust on the flockings, when a sort of velvet imitation will result. Don't disturb the wall until all is dry, when all loose particles may be dusted off.

Smalt, a sort of powdered glass or fine sand, may be procured in various colors, and be used in a similar manner, although it is best for sign work. To use *smalt*, first paint over the ground with oil paint as near the color of the smalt as possible, then while still wet sift on the smalt

and let dry. Black and blue smalt makes excellent grounds for signs.

The letters are first marked out and gilded, then carefully painted around with oil black or oil blue—*i. e.*, color mixed with boiled oil—and the smalt is dusted on.

Some very handsome work may be done on signs by first painting the sign-board smooth, then stencilling on a lot of figures as directed for painting walls, outside of the letters, and coating the figures with smalt; when dry, gild the whole over, leaving the lettering black.

To Renovate Picture-frames.

Many picture-frames are made of black-walnut or other hard wood, and simply boiled to bring out the color of the wood, and these become dusty and time-worn. To make them fresh again, they may be rubbed over with a woolen rag and raw linseed oil, or be varnished; the latter will generally make the best finish. Clean the frame thoroughly with soap and water, and dry it well, then with a small brush (a "sash-tool" as shown in Chapter III., Fig. 3, will answer), and a gill of furniture varnish the old frame may be made to look as good if not better than ever. Any oiled wood may thus be improved upon. If furniture varnish can not be readily obtained, shellac varnish will answer just as good a purpose and even better in many cases, as it does not dry so glossy—and by many would be preferred on that account. As soon as you are

through using your brush in shellac varnish, it should be immediately washed in strong alcohol, never with soap and water or in turpentine.

Floors for Bed-chambers.

Floors may be made to look well and wear a long time by first cleaning them nicely, then flow on a heavy coat of boiled linseed oil, let dry, and then give two coats of brown shellac varnish.

Ornamental Frosting for Walls.

When kalsomining or painting a wall, before the material applied is dry, sift upon it powdered mica (known as diamond dust), and a beautiful crystallization will result, which in the gas-light will glisten like thousands of diamonds. Try it.

To Prevent Dampness in Brick Walls.

Take a pound of mottled soap and dissolve it in a gallon of boiling water, and spread the hot solution with a kalsomine-brush over the outer surface of the wall—using care that it does not lather. Allow twenty-four hours for drying; then apply a second coating made by dissolving a pound of alum in two gallons of water. The soap and alum mutually decompose each other, and form an *insoluble varnish* which the rain is unable to penetrate. The work should be done in dry, settled weather.

Removing Hard and Dry Putty.

A careful and experienced glazier sometimes runs more risk of damaging the wood of a window-frame than the glass, because when the putty is very hard it adheres with such tenacity to the wood that it is almost impossible to separate it without taking some of the wood, which is much softer. It has been recommended to put on the putty a caustic paste made of quicklime and caustic potash or soda; but this works slowly and does not penetrate quickly enough to the required depth. The best thing is to take a soldering-iron, heated a little below red-heat, and pass it slowly over the putty where it touches the wood; be careful not to touch the glass in case this is to be saved. The putty will then become so soft that it can be separated easily from the wood.

Cleaning Marble.

Take washing soda, crush it fine, and mix with pulverized quicklime; mix this with water to a paste, then rub it on the greasy surface, and on this let it dry. When dry, scrape it off and wash the marble with soap and water. This is also good for sand or any porous stone.

Staining Wood.

Put some oil in a pot or dish, and stir in a little of the pulverized paints mentioned; try it on a small spot of the

cabinet to be stained; if not dark enough, put in more paint; if too dark, dilute with oil; if too red, put in more Van Dyke brown. To imitate walnut you will want mostly Van Dyke brown, with very little sienna. To give proportions of quantity would be useless, as it depends on the nature of the wood to be stained and of the dry paint you use, which will vary considerably. Just try until it suits your purpose, and you will not encounter the least difficulty.

CHAPTER XX.

Modern Styles of House Painting.

There is no reason why a house should be painted in the orthodox style of white, with green blinds, or in drab colors with darker trimmings ; and it is now deemed quite proper to launch out into dark greens, black, red, etc., on city buildings, more particularly on store-fronts. No better advertising medium can be had, sometimes, than the showy color, say vermilion, on a store-front, for it can be noticed a long distance off among rows of brick, marble, and dull-colored buildings, and we believe the plan, if properly carried out, so far as harmony of colors is concerned, will be found excellent, on dwellings as well, not so much to advertise them, but to distinguish them from others without the trouble of seeking the street number. Harmony by analogy, which has already been mentioned in previous pages, will possibly aid in choosing suitable tints and shades ; for it would be an endless task to enumerate all that could be used upon such work.

Dark green, made by adding yellow and black, as described in the chapter on mixing paint, may be made to

look well with trimmings of black or gold, and the same may be said of red, either Indian red or vermilion. Many store-fronts are painted with lampblack, then lightened up with touchings or stripings of gold, and they certainly prove attractive landmarks by their color.

Dwellings in a village or town could not be thus darkened in color, and tints of light or dark green, drab, buff, or salmon-color would prove, in most cases, superior to the monotonous white.

On page 8 the reader will find instructions for mixing tints, and from which may be chosen a suitable one for the work he has in hand. If a light green, or any other similar tint is desired, such as drab, light blue, cream, etc., first mix white-lead from the keg with either raw or boiled oil to the proper consistency for spreading with the brush —not too thick, nor too thin—then add, say, one pint of brown japan to each gallon of paint, and afterward stir into the white thus made, a little at a time, the color required to make the tint (as mentioned above). The color used should first be mixed thin with oil so that it will readily assimilate with the white. When the desired tint is formed the paint will be ready for putting on. It must be noted, however, that most any tint will fade or become lighter after a few months' exposure, and it is therefore best to make all mixtures a little darker than you wish to have them, in order to make allowance for this peculiarity.

Tints of light olive-green upon the sides of a dwelling

may have a trimming of darker olive, and the blinds, cornice, and even the roof may be a tint of red, made with Indian-red and white ; or perhaps still better taste would be displayed if these were a solid Indian-red color, with no white added, to make a stronger contrast.

To Imitate Brickwork.

Coat the surface to be painted with a mixture of Venetian red and a little yellow ochre, to take off the bright red glare, with boiled linseed oil, and a pint of brown japan to each gallon of paint. Two coats of this will be necessary in most cases, and when these are dry, the pencilling, either white or black, may be put on. The color for pencilling is mixed in the same manner as the red, but with a little turpentine added to cause it to run freely from the pencil. Pencils for brickwork may be obtained at any dealer's, and the lines are drawn by passing the pencil along a straight-edge, using great care to get the lines a proper distance apart and the joints of the brick well broken.

Stonework may be done in a similar manner, using the desired colors for gray, brown, Portland-stone, etc., the mixtures for which have already been mentioned in Chapter XIX.

CHAPTER XXI.

Home Decoration.

We will now enter the field of decoration, and endeavor to show how the interior of the home may be beautified.

Fig. 33.—Showing Suitable Leaves for Spatter-work.

There are many little things that the mother or daughter can do in leisure moments which will serve to break the monotony of the ever-present knitting, crocheting, and

sewing or embroidering. The first to be considered is the making of a handsome wall decoration in spatter-work—not the usual white and black attempts—but a real good picture, if the directions be well followed.

The leaves of the oak, maple, geranium, and other plants and trees, ferns, etc., should first be gathered and placed

Fig. 34.—Brush for Spatter-work.

between the leaves of a book, and under a heavy weight to press them perfectly flat.

Next procure some fine quality drawing paper, say royal, 19 x 24 inches, costing $1.00 per quire, a paper of very small pins, and several sticks of India ink. Break the India ink into small pieces and put it into a small bottle with a little warm water, and shake it repeatedly until it is all dissolved and the liquid is some-

Fig. 35 shows a Spatter-stick.

what thicker than writing ink. Next procure a good quality tooth-brush and a stick shaped something like Fig. 35, from four to six inches long. These constitute all the requirements for making the picture. Upon a smooth

board, large enough to take on a sheet of drawing paper, or a soft pine table, fasten the paper down smooth by tacks in each corner. Now open the book of leaves and lay them out carefully, so that in arranging them you can quickly see which leaf or vine to choose.

Begin at the bottom if you decide upon making a wreath, and laying the largest leaves with their serrated edges turned outward, one lapping over the other; continue, sticking a little pin here and there to hold each part in place, until the wreath is formed to your satisfaction with the leaves. Care should be taken to place the largest leaves at the bottom centre, and diminish in size as you approach the apex or top. All the leaves must point outward. Having pinned down and securely fastened every leaf, the work of spattering begins.

Pour into a saucer or other shallow dish some of the India ink, and with the fore-finger of the right hand dipped into it, apply a very small quantity upon the ends of the bristles of the tooth-brush. Hold the brush—bristles upwards—in an inclined or nearly perpendicular position directly over the leaves and paper, and at least six inches above them, and with the stick pass over the bristles from bottom to top very gently. The movement of the stick will cause the bristles to bend and spring back again, while the ink will fall in a fine spray over all beneath. The operation should be repeated until the paper is colored slightly gray nearest the edges of the leaves, and

Fig. 36 REPRESENTS A WREATH DONE IN SPATTER-WORK.

blended off to nothing as it recedes from them. The darkest shade should be given the bottom. Care must be taken not to drop a large spot, or to spatter so much in one place that one spot will run into another and make a blot. When this is done take the pins out of one or two leaves at the bottom and remove the leaves; then carefully spatter the edge of those leaves which were under the ones taken off. Continue taking off the leaves, going from the bottom upward, and spattering each edge as it is exposed. One side of each leaf may be spattered a little darker by holding the brush in a certain position—a knack easily learned. When all the leaves are thus spattered and removed, take a pen and with the India ink lightly sketch in the veins of the leaves. Fig. 36 represents a wreath done in the manner described. The original picture from which our engraving was made measured 11 x 9 inches.

Some beautiful work may be done by the addition of a cross, a monument, or some other figure, and these may be cut out of paper, and arranged in the same manner as the leaves, the thickness of the cross being cut off after the first spattering, and the white face of the cross replaced, until all other parts are done. The spattering should be darkest at the base. When all is done and your picture nicely framed it will present a very neat appearance if you have performed the work properly (see Fig. 37). The original from which our engraving was

Fig. 37 REPRESENTS A SPATTER-WORK CROSS.

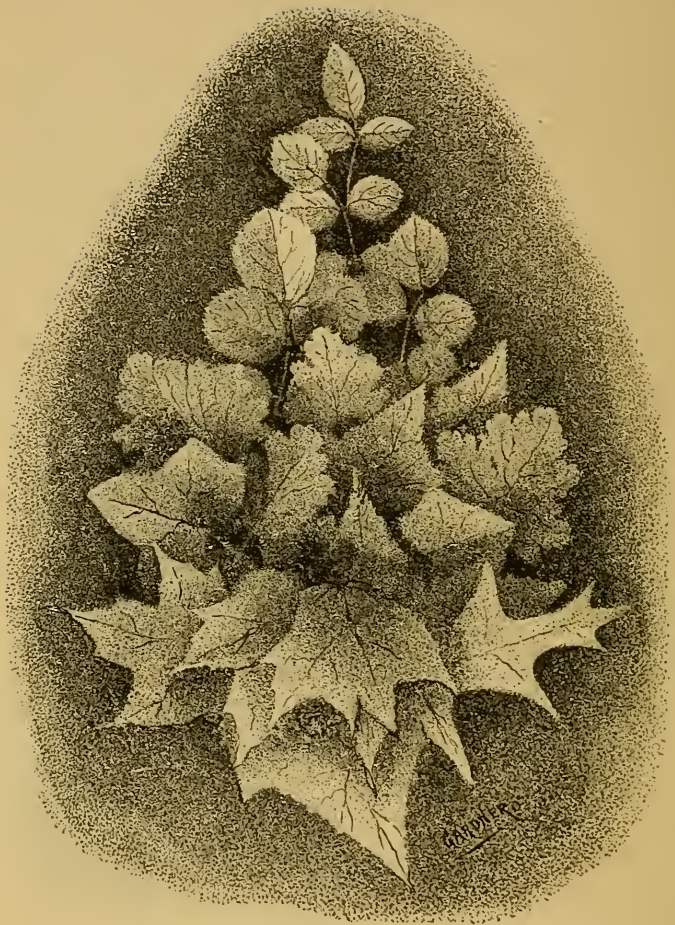

Fig. 38 shows another Specimen of Spatter-work.

made measured 9 x 12 inches. Fig. 38, which represents another specimen of spatter-work measured 10 x 12 inches before reduction.

Spatter-work may also be done on fine satin or linen, and thus form very handsome pin-cushions, wall-pockets, etc.

Again, a white door may be taken from its hinges, and laid horizontally while the panels or stiles are ornamented in this manner; after which a very thin coat of shellac varnish should be put over it, with a soft varnish brush, exercising great care not to touch the work but once, and that very lightly or the figures might be disturbed.

CHAPTER XXII.

Questions Asked and Answered.

In the foregoing pages a fair description of "What can be done, and the way to do it," has been given; but there are many items of interest connected with the subject which it may be well to impress more forcibly upon the reader's mind in order that those who undertake to carry out any of the many formulas, may not after one or two trials fail on account of some misunderstanding.

The foregoing chapters, after being placed in type, were submitted to those who could readily comprehend what had been written, for criticism, and many questions on points which to them seemed somewhat vague have been propounded.

The first of these series was from a lady in reference to the

Renovation, or Repolishing of a Piano.

The case of a piano only, will be found to be polished, while the legs, especially carved ones, are varnished. The varnish used on this work is called by the manufacturer,

"Piano-polishing," for the case, and "Piano-flowing," for the legs and stool. It is seldom that a piano becomes so badly dilapidated that it is unfit for refinishing; but when one does get scratched or bruised so badly as to be unfit, the varnish should be wholly removed. This may be done by scraping with a steel scraper, such as is used by carpenters, or the varnish may be softened with a solution of ammonia and then be scraped or washed off.

Take, say, two ounces of spirits of ammonia and add two ounces of water; then with a rag tied to a stick, sop over the surface, and allow it to set a few moments, when the varnish will be found to soften. Take a part of the work in hand at a time, say the back of the piano, and complete that before going to other parts, and care should be taken that no ammonia gets upon the inner works. When all has been cleaned in this manner, let the dampness dry out, then with No. 1 sand-paper rub all parts smooth, dust off, and apply a coat of varnish, known as "Scraping or Filling" varnish. Two or three coats of this varnish will be necessary to make a good foundation for the "Piano-polishing" varnish, which is next in order. The "Scraping" varnish having become dry and hard, take a flat steel scraper and scrape over the surface, taking most of the varnish off, but leaving the pores of the wood well filled. Sand-paper lightly with fine sand-paper and put the polishing varnish on plentifully, and as evenly as possible. Two coats of polishing varnish will be enough.

When dry, say in two days, the work of polishing is begun.

First, rub the surface as smooth as possible with pulverized pumice-stone and water, wash off and dry well. Next, have at hand a vial of brown shellac varnish and another of boiled linseed oil. Then take a strip of list several yards long, and roll it up into a flat roll, over which tie a piece of cloth or flannel to form a flattened rubbing pad. Now saturate the face of the pad by dipping it into a shallow dish containing the shellac, then drop a few drops of the oil from the vial upon the face of the pad and begin rubbing the varnish. The use of shellac and oil will become apparent, when the pad does not pass easily over the varnish, showing that more shellac and oil is necessary. Continue the rubbing in a circular manner, so that any fine scratches may not be seen, until the whole case has a smooth, even gloss.

The carved legs may be varnished with the "Piano-finishing" varnish, and the job completed.

Where the varnish is in good condition, it is only necessary to repolish it; and the same operation as above may be carried out. Not only is this a proper way to fix up a piano, but an organ or any other piece of furniture may be done in a similar manner. The polishing of the varnish on a carriage body is done by rubbing the varnish with pulverized pumice-stone and water, then with pulverized rotten-stone and water; afterward with rotten-

stone and sweet oil. The work upon a heavy job often occupies one man from eight to ten days' time. It should be borne in mind that this elaborate refinishing is only required where a piano is in very bad order. Ordinarily, a coat or two of "Piano-polishing" varnish for the case, and "Piano-flowing" varnish for the legs will answer every purpose—of course, polishing the case as described above.

Renovating Cottage Furniture.

A lady wishes to know how to improve the appearance of a set of cottage chamber furniture, which is now painted a cream color and ornamented with flowers. The best way to clean up such work, where it is not too far destroyed, is to rub every part clean and smooth with pulverized pumice-stone and water; wash and dry well, and lay on a coat of light-colored Carriage-Rubbing varnish. If the furniture is bruised so badly that it is necessary to repaint it to make a good job, and the ornamental work may be saved,—

First dissolve some glue in hot water, so that it is about the consistency of cream, then add enough whiting to give it the body of paint. Keep it hot, and with a small brush lay a coat over all the parts to be saved, that is, the flowers, leaves, etc., and let dry. When dry, paint over the furniture the same as if there was no ornamental work upon it, with any desired tint (see chapter on tints).

When the painting is done, take some warm water and a soft rag or a sponge, and wash off the glue, which will soften easy and come off, leaving the figures as if newly painted upon another ground.

What is Pumice-stone?

Pumice-stone is the lava from a volcano. It comes to us in lumps of various sizes. It is exceedingly porous, and most of it so light that it will float upon water. The lumps are cut with a saw and file to any desired shape, and it is then used in connection with water for levelling the surface of paint on carriage bodies. Pulverized pumice-stone is the lumps ground fine in burr-mills, and sifted or bolted to various degrees of fineness. It is used with water in levelling varnish coats, or for cleaning paint or metals.

Furniture and Carriage Varnish.

"What is the difference between furniture and carriage varnish?" Carriage varnish is made from the best gum-copal, linseed oil, and turpentine; the different grades being formed by the different quantity of ingredients or their quality. The best quality is known as "Finishing," and various names are given by the many manufacturers, such as "Wearing Body," "Body Finishing," etc. Carriage varnish from England has for a number of years held supremacy over other makes; but the American var-

nish-makers have at last equalled it, and although many carriage-makers use the English brand upon their work, the majority of those in this country give preference to American varnish.

Furniture varnish is greatly inferior, being made from inferior gums and resins. It is suitable only for inside work, having no durability when exposed to the weather.

Painting Window-Blinds.

"Will the paint as mixed for a lumber-wagon answer for window-blinds?" No, window-blinds should be painted with pure *oil* paint; a trifling amount of brown japan may be added to hasten the drying; but good boiled linseed oil will give the best results. Mix the dry color to the proper consistency for spreading with boiled oil only, and apply as evenly as possible.

Varnishing Wall-Paper.

"Can wall-paper be varnished?" There is a certain class of wall-paper made specially for varnishing, and used for wainscotings, etc.; but as a general thing the wall-papers are unfitted to receive varnish, even when carefully sized with starch or glue-water.

Learning to Letter.

"Can I learn to letter signs and wagons from books?" Yes; you may gain a sufficient amount of information

from books to enable you to practice lettering, and by practice you may become proficient. An excellent book for a beginner is "The Complete Carriage and Wagon Painter," by Fritz Schriber, published by M. T. Richardson, No. 7 Warren Street, New York, (price $1.00). In this book rules are given for laying out and painting letters for both wagons and signs, and the work is very complete. If you have no taste for drawing a letter, and feel too old to learn how, there are templets of brass, by the use of which you may draw the outline of any letter. Then, there are sets of the alphabet cut out of strong pasteboard, that you can lay upon the work and mark around; but, after all, the knowledge is quickly gained, and the book spoken of fills the bill.

"What is meant by Harmony of Colors?"

Harmony of colors is just as essential in pleasing the eye, as the harmony of sound is to pleasing the ear. The subject, if fully explained, would occupy too much space in a book of this kind. However, it may be said: There are three primary colors, viz.: Red, Blue, Yellow; and these can not be made by the mixture of other colors; but by mixing the primaries in pairs, other colors, called "complimentary colors," are formed. For instance, red and blue make violet; red and yellow, orange; and blue and yellow, green. If green be placed beside red (the primary not in green) the red will be improved, and *vice*

versa. If orange be placed beside blue (the missing primary), both colors will be intensified, and so on; but if blue be placed beside green, without the interposition of white or black, the eye would not be pleased, which shows that the color combination is not harmonious.

White and Black are known as neutral colors.

Harmony by contrast is the mingling of colors which are quite different, as red and green, yet pleasing to the eye.

Harmony by analogy is the mingling of colors very similar in tone—that is, a light green and a medium or dark green. We often see an ornament painted in what is called "Monochrome," *i. e.*, one color, but in various tints, as, for example: a monogram would be laid in in pink, the dark shades in carmine, the middle shades vermilion, and the high-lights in white, tinted with red. This is harmony by analogy, and the eye is generally pleased with such a combination. See "Chevreul on Color," a work by a noted French chemist.

Painting Toys.

"With what are toys generally painted?" Toys are painted with size or water-colors. The paint dries quickly, and is then varnished with shellac, if a gloss is desired. The work is generally done by small girls, who become very dexterous in the handling of the brush.

Ammonia, and How it Injures Varnish.

"We notice nothing in your proof-sheets about ammonia, that deadly enemy of varnish and paint. Will you please give us a description of its action and of what it consists of?"

Ammonia, in its uncombined form, is an elastic gaseous body. It is volatile and easily destroyed by heat, but it is rapidly absorbed by water, which it takes in solution about 780 times its volume. It is liberated whenever any of the compounds of this alkali are acted upon by potash, soda, lime, and many of the alkaline earths, lime being one of the quickest to act.

Muriate of ammonia is produced by the decomposition of vegetable matter and the excrement from animals. Lime and other articles act upon the ammonia and liberate the gases, the action of which is very serious on varnish when the surface is not dry.

This is accounted for by the affinity of ammonia to water, the two forming an alkali which acts upon the oil in the varnish, and by absorbing it deprives the varnish of the element so necessary for its life and lustre.

Owing to the volatile character of ammonia, it will distribute itself over a large space, and where the conditions are favorable it will work permanent injury. In storing carriages, therefore, care should be taken to select a location as free from moisture as possible. If the carriage-

house is kept dry, so that no moisture settles upon the varnish, no injury will arise from ammonia; but if the air of the room is charged with moisture, the ammonia will destroy the varnish, even though the quantity is so slight as to be imperceptible. Brick stables or plaster walls, owing to the presence of lime, are far more injurious than when the surroundings are wood. Some of the earths are nearly as injurious as lime, and a varnished surface covered with dust, if standing in a room where the air is not absolutely dry, will act the same as lime, and the volatile alkali will destroy the life of the varnish, though this may not be apparent when the carriage is first washed off. Ammonia exists wherever animals are stabled, and the only real protection from its ravages is by hot, dry air.

Recent improvements in varnish have made some kinds less susceptible to ammonia than others, but in the absence of these, or even with these, dry air is the main safeguard.

Detecting Adulteration in Dry Colors.

"Please tell how we can detect adulteration in dry colors, if it is possible to do so?"

The adulteration of pigments, and in some cases their imperfect manufacture, are conditions that it is not always possible to guard against, for the difference between good and bad material is not discoverable until the work on which the material is used is completed, and too late to

rectify the error. White-lead frequently contains a large percentage of barytes, and vermilion of red-lead, or other heavy pigment, and even though we have at our command tests for proving their purity, we do not always feel disposed to apply them until it is discovered that something is wrong.

White-lead, if pure, when thrown on a piece of burning charcoal, will first turn yellowish, then melt down into metallic globules. If impure, there will be a residue of white earthy matter. Vermilion, if pure, will entirely evaporate if thrown on a red-hot iron.

Chrome yellow may be tested by pouring on it a little nitric acid; if it effervesces, it is adulterated; if not, it is pure.

Ultramarine blue, if adulterated, will scarcely be affected by nitric acid, but if pure will lose its color almost entirely. If Prussian blue and indigo be used to adulterate ultramarine, it may be detected by throwing some of the blue on live charcoal, when, if a bluish vapor is given off, having a smell of burning indigo, the adulteration is certain, otherwise it is possibly pure.

Cheap japans, used as dryers, are in part responsible for a large class of paint troubles. A good japan will readily assimilate with oil, while a poor, worthless one will be found to coagulate or curdle, and resist every attempt to mix with it. The fading of a color after it is upon the work is generally due to the effects of sunlight, ammonia

from the stable, or in some cases to a mixture of pigments which are inharmonious. In manufacturing pigments, it is often necessary to combine two colors while in pure and limpid solutions, rather than to mix the two dry pigments, in order to arrive at a perfect tone or hue of color, and the painter will find the same rule applicable in some cases in mixing certain colors to form others. For example, if he desires a rich shade of green, he will find it advisable to mix Prussian blue with his vehicles, and grind it fine in the mill; then mix chrome yellow in a similar manner and grind that; and after this, to add the blue to the yellow paint during a lively stirring with a stick or spatula, until the desired shade is obtained. This method will result in a better commingling of the particles of the pigments, and produce a better color than by the more common method.

The durability of a color is in many cases dependent upon the vehicles used in mixing the paint, or in the exposure it receives. We are told by one writer—who, perhaps, had a single example set him—that "zinc white should always be used in place of white-lead at the sea-side, where it is especially durable. The action of the salt air injures the lead."

While another writer tells us that "white-lead is the more durable of the two—zinc and lead—in exposed situations at the sea-side, where salt air is present."

Another, and I believe the most sensible of the three,

says: "The most durable white for exteriors is a mixture of white-lead and zinc in equal parts, mixed or thinned with pale boiled oil, raw oil being more liable to be sucked into the wood, leaving the pigment without sufficient binding." The reason of this is obvious; the white-lead possesses the most body, and consequently gives a better covering, and the zinc being less affected by salt air (presumably) acts as a preservative to the lead, and thus durability is extended. However, I am of the opinion that the decision arrived at regarding the use of either, alone or mixed together, is based upon insufficient testimony coming from those, perhaps, who have an axe to grind.

Much of the durability of colors depends upon the ground over which the paint is spread. If the ground be porous to absorb the vehicles of the paint, the pigment will be deprived of a sufficient amount to keep it in color —it will fade or turn gray. You will often see pigments in lumps, which, if broken, present a deeper or more brilliant tone upon the inside than upon the outside, and this is the case with paint that has lost its vitality by the absorption of the oil, so that care should be had to form a good foundation.

GLOSSARY.

Badger-hair Brushes.—Brushes made from the hair of the animal of that name, used for fine varnishing or "color-and-varnishing" principally.

Benzine.—A volatile spirits distilled from petroleum or coal oil, used as a substitute for turpentine both as a vehicle for paint, and as a thinner for varnish. It was, during the rebellion, the only vehicle within the reach of moderate means, turpentine being at one time $2.50 per gallon, but it is now looked upon as worthless in the paint-shop. It can be readily discovered by its pungent odor, and care should be taken in purchasing turpentine, that it is not used as an adulterant.

Black Japan.—A solution of asphaltum or Jew's pitch in linseed oil or varnish. It comes ready prepared at a cost of $4.50 per gallon.

Bristle Brush.—A brush made from the bristles of the hog. The best are taken from the wild hog of Russia, while the animal is alive. The hogs are allowed to roam the dense forests, where thousands of nut-growing trees supply them with food, and on which they fatten. Their bristles grow to an enormous size. They are driven into corals, seized by strong hands, one at a time, and their bristles pulled out while suffering excruciating pain, as their cries attest. They are then allowed to go free to grow another crop of bristles.

Bronze.—A fine powder of various metals, made by first comminuting the metal, then mixing it with honey and grinding it exceedingly fine, after which the honey is removed by washing and the metal dust dried on shallow pans.

Camel's-hair Brushes.—Brushes made of hair said to be from the camel, but which for the most part comes from the tail of the Russian squirrel. They are soft yet elastic, and have no superior for spreading fine colors such as are used on carriages.

"Chiselled."—A term used to denote that the bristles of a brush are tapered down or worn off on the edge to a chisel shape. This is done by the brush-maker to give the brush a better shape for laying paint. It was formerly the practice to wear down a new brush on some rough surface to get it in order for good work, but chiselling obviates that trouble. The bristles are drawn back on each side of the brush, forming a thin edge, and leaving the split-end of the bristles intact. Those that are ground off are not so soft and elastic.

Drying Dead.—With no gloss; the paint will be of one appearance throughout, with no lustre.

Egg-shell gloss.—Paint drying with a very slight lustre, in fact like an egg-shell—not dead.

Glazing.—The art of giving a ground-color a different shade or richness by coating it with a transparent glaze or thin wash. The pigment, such as carmine, ultramarine blue, etc., is mixed with varnish to form a sort of colored varnish, not a solid covering, and then applied the same as varnish to a ground quite near the color of the glaze. For carmine, any dark or light red may be used as a ground. For blue, any shade of blue made of Prussian blue, may be glazed with ultramarine. For green, use verdigris or Paris green, for a glaze. For

yellow, or for dark bottle-green, use yellow lake or Dutch pink for the glazing color.

Japan Drier, or Brown Japan.—A drier for paints made by boiling linseed oil with substances which give it drying properties, such as manganese, sugar of lead, red-lead, litharge, etc., and adding for a body, gum-shellac or inferior varnish gums. Price generally $1.50 per gallon.

Japan-Gold-size.—A superior quality of brown japan, intended for a drier of paint, and not, as many suppose, a size for metallic leaf or powder. It is of twice the strength of brown japan, and its price is in proportion, *i. e.*, $3.00 per gallon.

Leaf.—Any metal rolled and beaten into thin sheets, as gold-leaf, nickel-leaf, etc.

Linseed Oil.—An oil expressed from flaxseed.

Pencils.—The name given to all small brushes, less in size than the sash-tool, as striping-pencils, lettering-pencils, etc. Some pencils are made of sable-hair, and are quite expensive, as the hair is obtained from a small animal of the weasel family, and that only from the tip of the tail. Camel's-hair pencils are, as before said, made of Russian squirrel-hair. Ox-hair pencils from the hair that grows in that animal's ear. Pencils are bound in quills of all sizes, in tin, and some are simply hair tied to a stick.

Pigments.—Coloring substances generally in powdered form, produced by chemical means or dug directly from the earth. The list embraces many colors which may be made by the painter, by combining simple pigments, and would occupy too much space here, but a few only will be noticed.

BONE-BLACK.—An inferior black made by burning the bones of animals, instead of ivory.

CARMINE.—A blood-red color extracted from cochineal. It is the most expensive pigment used in carriage painting, and therefore seldom put on in the same manner as other colors. Glazing is resorted to, to lessen the quantity of pigment used.

INDIAN-RED.—A deep red pigment, a chemically prepared ochre, or earth.

IVORY-BLACK is made by calcining the chips and refuse of ivory-workers. After being burned the charcoal thus formed is ground in powerful mills, while mixed with water. The best quality is known in the trade as "German ivory-black," imported into this country in the form of a fine powder, the price ranging from fourteen to twenty-three cents per pound wholesale.

LAMPBLACK.—The soot from burning oils, fat, tar, vegetables and other like matter. Lampblack is the most durable pigment in use, being nearly pure carbon.

PRUSSIAN BLUE.—A pigment made by chemically preparing the refuse of slaughter-houses, etc.

SIENNA.—Similar to umber, but of a deep salmon-color when burned.

ULTRAMARINE BLUE.—Named from the precious stone which was originally powdered to form the color, and which came from "across the sea," *ultra*—beyond, and *marine*—the sea. The *Lapis lazuli*, or precious stone, was indeed too precious, and the pigment we now employ is made by chemical means.

UMBER.—An ochre, the natural color of which is very nearly that of iron-rust, but when burned it becomes darker and of a rich brown color.

VERMILION.—A bright red pigment made by combining chemically, sulphur and mercury. There are several brands of American vermilion, but English vermilion is

by far the best, the "light" being used extensively wherever a bright red is wanted, the "deep" for ordinary work.

WHITE-LEAD.—A pigment made by subjecting the metallic lead to the fumes, or corroding influence of vinegar, when it becomes a fine white powder. Much of this is ground in huge mills while mixed with linseed oil, and is then technically known as keg-lead or tub-lead. Dry white-lead is the powder unmixed.

Pumice-stone.—The lava from a volcano. The lumps or pieces of stone are used for scouring down old paint or for levelling rough-stuff on carriage bodies; the powdered or pulverized pumice-stone is simply the lumps ground to powder, for rubbing varnish smooth.

Rough-stuff,—as its name implies,—is a rough-grained paint designed to level over any hollows or imperfections in the surface to be painted and varnished, as a carriage body. It is composed of some cheap ochre or other hard and gritty pigment, so that the stone with which it is rubbed will grind it down smooth and not clog or fill up. A good recipe for Rough-stuff is as follows:

Take equal parts of dry white-lead and Grafton paint or English filling (an earth), and mix them with equal parts of rubbing varnish and brown japan; grind loosely through the paint-mill; then thin to a working consistency with raw linseed oil one part, turpentine two parts.

Size.—A name given to any mixture which becomes adhesive when partly dry, as "gold-size," the proper name of which should be "gilding size," to distinguish it from the paint drier—gold-size. However, there is a gilding size imported from England under the name of "Harland's gold-size," which is one of the best for laying leaf or bronze upon.

Tint.—A change of white by the addition of any other color, as pink, straw, gray, etc.

Turpentine.—A volatile oil, generally called spirits of turpentine, obtained by distillation from pine-wood, the residue being tar and pitch. Pure turpentine evaporates quickly, leaving no sediment, consequently it is not used in paint to bind the particles of pigment together, but to make the mixture more limpid, that it may be spread easily with a pencil or brush.

Varnish, Carriage.—The varnish for carriages is made by melting copal gum, mixing it with linseed oil and adding a drier to it, then thinning to the proper consistency with turpentine. The best quality is called Wearing Body, at from $5.50 to $6.00 per gallon. This varnish is very pale, and excels in freedom and safety of working, as well as in brilliancy and durability. In good weather it dries out of the way of dust in eight hours; hardens free from tack in four days; sets so slowly that it affords ample time to make a perfect job on the largest panels, and the job will be ready for use in five or six days. This varnish is excellent for front-doors to dwellings.

Varnish, Carriage-Rubbing.—A varnish designed for the first coats or under coats of varnish on carriages, which is rubbed level with pulverized pumice-stone and then varnished over with a finishing, or better grade of varnish. It is excellent for some work in the house, and for mixing in colors.

Varnish, Damar.—Made by dissolving damar gum in spirits; it is quick-drying, very white (of a milky appearance), but the gum is soft and the varnish never hardens well. It is used for mixing with white-lead or zinc-white, to form what is known as "China gloss" for interiors, etc.

Varnish, Furniture.—A mixture of inferior gums and resins with linseed oil, or with inferior oils, such as cotton-seed oil, fish oil, etc. It serves a very good purpose on common furniture, or upon any work of a dark color which is not to be exposed to the weather. Price varying from $1.50 to $3.00 per gallon.

Varnish, "One Coat Coach."—For finishing-coats on ordinary work. This varnish, though not so pale or durable as Wearing Body, is *heavy-bodied* and especially adapted for finishing bodies or gears of carriages, when a single coat only is practicable. In good weather it dries in seven hours with fullness and brilliancy, and wears well.

Varnish, Shellac.—A solution of shellac gum and alcohol. There are three kinds in common use, viz.: brown shellac for common work; white shellac (a milky substance) for white work, and pale French shellac (the color of cider) for any kind of work. Shellac varnish dries in a few minutes, and ranges in price from $2.00 to $4.00 per gallon.

Vehicle.—Any liquid used in mixing paint.

Zinc White.—Made by burning the metal zinc, and condensing the smoke and fumes; it is a very pure white, and preferred on some work to lead.

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